

COMMONWEALTH OF VIRGINIA
Department of Environmental Quality
Valley Regional Office

STATEMENT OF LEGAL AND FACTUAL BASIS

INVISTA S.à r.l.
Waynesboro, Virginia
Permit No. VRO80517
Effective Date: October 16, 2006
Expiration Date: October 15, 2011

Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and VAC 5 Chapter 80, INVISTA S.à r.l. has applied for a Title V Operating Permit for its Waynesboro, Virginia facility. The Department has reviewed the application and has prepared a Title V Operating Permit.

Engineer/Permit Contact:_____

Date: 09/18/06_____

Air Permit Manager:_____

Date: 09/19/06_____

Deputy Regional Director:_____

Date: 09/19/06_____

FACILITY INFORMATION

Permittee

INVISTA S.à r.l.
400 Dupont Boulevard
Waynesboro, Virginia 22980

Facility

INVISTA S.à r.l.
400 Dupont Boulevard
Waynesboro, Virginia 22980

Plant ID No: 51-015-0009

SOURCE DESCRIPTION

NAICS Code	Manufacturing Description
325211	Plastic Materials, Synthetic Resins, and Nonvulcanizable Elastomers
325222	Manmade Organic Fibers, Except Cellulosic

INVISTA S.à r.l. (INVISTA) owns and operates a synthetic fiber production facility located in Waynesboro, Virginia. The facility is a Title V major source of volatile organic compounds (VOC), sulfur dioxide (SO₂), nitrogen oxides (NO_x), carbon monoxide (CO) and hydrogen chloride (HCl). This source is located in an attainment area for all pollutants, and is a PSD major source. The facility is currently operating under a minor new source review permit issued on November 29, 2001 as amended July 25, 2005. The plant was built circa 1929. The facility consists of 4 main areas:

- The Powerhouse
- The Coal Handling System
- The Lycra® Production Facility
- The Nylon Fiber Production Facility

Below is a brief description of each of these areas.

Powerhouse Process Description

There are currently three boilers installed in the powerhouse which have predominantly used coal, with minor modifications and fuel use upgrades prior to 1972. Boiler #1 (2-205(B#1)) is rated at 196 MMBtu/hr and was installed in 1967, Boiler #2 (2-205(B#2)) is rated at 209 MMBtu/hr and was installed in 1966, and Boiler #3 (2-205(B#3)) is rated at 209 MMBtu/hr and was installed in 1965.

There are also three Dowtherm® vaporizers which provide heat for the nylon fiber production operations at the facility. Vaporizers #1 and #2 (2-205(V#1) and 2-205(V#2)) were installed in 1977 and are mainly fueled by natural gas and residual oil, however they have the design capacity to use distillate oil as well. Vaporizer #3 (2-205(V#3)) was installed in 1997 and is fueled by natural gas and distillate oil. Vaporizers #1 and #2 are rated at 43 MMBtu/hr maximum heat input capacity (30 MMBtu/hr. heat output), and Vaporizer #3 is rated at 22 MMBtu/hr maximum heat input capacity (16 MMBtu/hr heat output).

The boilers and vaporizers share one common stack (2-205). An auxiliary stack (2-31) is used at the Powerhouse when the main stack is out of service for inspection or repairs.

Coal Handling System

Coal is transported to the coal handling facility mostly via railcar, although a small amount is delivered by trucks. Coal is fed through a shuttle-type vibrating feeder and transferred by a belt conveyor to a holding hopper. This hopper chutes coal to either the coal storage pile or a crusher, which drops coal to a short belt, then a long belt, and finally to the top belt conveyors to the silos. A reclaim hopper and chute catches any coal that drops off the belts at the main transfer points, which are enclosed. The top belt feeds 4 silos serving the boilers. Silos 1A and 1B serve Boiler #1, with a capacity of 150 tons each. Silos #2 and #3 serve Boiler #2 and Boiler #3 respectively, each with a capacity of 190 tons.

Nylon Fiber Production Facility

The Nylon and Flake production facility, also referred to as the BCF nylon facility, was built between 1975 and 1978. Nylon flake production capabilities were added in 1997. The facility produces nylon fiber and nylon flake. The fiber is used in the manufacturing of carpets and the flake is used in the production of automobile safety air bags.

Adipic acid (HAD) and hexamethylene diamine (HMD) are unloaded from railcars into storage tanks at the raw material tank farm area. The HAD and HMD go to a primary reactor which is controlled by a one gallon per minute water scrubber equipped with a single spray nozzle that injects material back into the process. A secondary reactor introduces more HMD and produces nylon “salt”.

Nylon salt is then introduced into the continuous polymerization (CP) area where it goes through a pre-evaporator and pre-polymerizer process prior to being sent to the spinning area. In the spinning area, the nylon goes through a lubricating (primary finish), heating, drawing and bulking process before being wound onto tubes. The tubes are sent to the inspection and packing area where quality tests are performed prior to the tubes of yarn being packed and shipped to customers.

Lycra® Production Facility

The Lycra® production facility, which produces INVISTA's brand of spandex fiber, is comprised of three basic areas: polymer processing, spinning, and solvent recovery.

Lycra® Polymer Processing

In polymer processing, an aromatic di-isocyanate (Methylene bisphenyl isocyanate - MDI) is combined with glycol in a heated reactor to form the base polyurethane polymer, or "capped glycol". A polymer solution is then formed by the addition of a solvent, N, N-dimethyl acetamide (DMAc). At this point, the solution is called "diluted capped glycol". The diluted capped glycol solution is transferred to a second reactor where various reagents are employed to determine properties of the polymer such as chain length. The polymer is then filtered. As a final step, a variety of additives are mixed with the filtered polymer solution to provide properties to the finished yarn that the polymer alone would not give. Resistance to sunlight, whiteness retention and resistance to the effects of chlorine bleach are some of the desirable properties that the additives contribute to the final product. The polymer solution is then ready for spinning into Lycra® fiber.

Lycra® Spinning

The spinning process involves flow of the polymer solution through a spinneret and into a heated, nitrogen inert spinning cell. The spinning process is actually an extrusion of the polymer into very fine, hair-like filaments. The spinning cells are kept neutrally balanced to slightly negative in pressure, and along with the nitrogen, volatilized DMAc is evaporated and removed from the spinning cell. Brine-cooled condensers condense the DMAc, which is then sent to a recovery area for purification and recycling. The nitrogen is returned to the spinning cell for re-use.

The filaments with the DMAc removed are gathered together to form strands of fiber. The number of filaments determine the thickness or "denier" of the fiber. The fibers are wound onto tubes at the bottom of the spinning cell and these tubes are removed as they become full. The full tubes are inspected and packed into boxes for shipment or are wound onto a long metal beam for shipment.

Lycra® Solvent Recovery System

Condensed DMAc is returned to the solvent recovery system for purification and recycling. Makeup DMAc is added to the system primarily to account for that which is lost to the atmosphere, solution waste, tart still purges, and waste treatment.

COMPLIANCE STATUS

The facility is inspected once a year. INVISTA was last inspected on September 20, 2005, and

was found to be in compliance.

CHANGES TO TITLE V OPERATING PERMIT

The existing Title V permit for the facility was issued on October 15, 2001 and expires on October 15, 2006.

On January 16, 2002, in accordance with 9 VAC 5-80-240.A of the Virginia Regulations for the Control and Abatement of Air Pollution, the Department of Environmental Quality reopened the Title V operating permit. The permit reopening was necessary to correct terms and conditions of the permit with respect to confidential business information. This reopening eliminated the confidential addendum from the permit as well as established new permit terms and conditions necessary to ensure compliance with the emission limits for the Lycra, Permasep, and Nylon production facilities.

On May 21, 2004, an administrative amendment to the Title V operating permit was issued to reflect the ownership change from E. I. DuPont de Nemours & Co., Inc. to INVISTA S.à r.l.

Also, a minor amendment of the Title V operating permit was issued on January 27, 2006. This modification included following changes:

- Update emission limitations associated with the Dowtherm[®] vaporizer (Ref. 2-205(V#3)): The emission limitations for the Dowtherm[®] vaporizer (Ref. 2-205(V#3)) were updated to correspond with current AP-42 emission factors. There was no increase in fuel throughput and no physical modification to the Dowtherm[®] vaporizer (Ref. 2-205(V#3)). Also, there were no changes to monitoring, recordkeeping or reporting requirements.
- Delete requirements related to the Permasep[®] production facility and Boiler #4: The requirements related to Permasep[®] production facility and Boiler #4 were deleted as these units were shut down and removed from the facility.

The renewed Title V permit also includes a Compliance Assurance Monitoring (CAM) plan for the baghouse serving three boilers. Also, “place holder” language has been included pursuant to requirements contained in 40 CFR Part 63 Subpart DDDDD, for the boilers and process heaters (2-205(B#1), 2-205(B#2), 2-205(B#3), 2-205(V#1), 2-205(V#2) and 2-205(V#3)).

EMISSION UNIT AND CONTROL DEVICE IDENTIFICATION

The emissions units at this facility consist of the following:

Table I. Significant Emission Units

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity*	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date
Process: Powerhouse							
2-205 (B#1)	2-205 BH	Combustion Engineering, Inc., Model # VU-40S Boiler #20543 (1967) (Coal)	196 Million BTU/HR	Joy Manufacturing Co., Western Precipitation Division (Therm-O-Flex Filter)	2-205 H	PM PM-10 Pb HAP Solids	11/29/01 Amended 07/25/05
		Combustion Engineering, Inc., Model # VU-40S Boiler #20543 (1967) (Residual Oil)					
		Combustion Engineering, Inc., Model # VU-40S Boiler #20543 (1967) (Distillate Oil)					
		Combustion Engineering, Inc., Model # VU-40S Boiler #20543 (1967) (Natural Gas) (Igniters installed in 1994) (Natural Gas)	20 Million BTU/HR				

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity*	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date
2-205 (B #2)	2-205 BH	Combustion Engineering, Inc. Model # VU-40S Boiler #20185 (1966) (Coal)	209 Million BTU/HR	Joy Manufacturing Co., Western Precipitation Division (Therm-O- Flex Filter)	2-205 H	PM PM-10 Pb HAP Solids	11/29/01 Amended 07/25/05
		Combustion Engineering, Inc. Model # VU-40S Boiler #20185 (1966) (Residual Oil)					
		Combustion Engineering, Inc. Model # VU-40S Boiler #20185 (1966) (Distillate Oil)					
		Combustion Engineering, Inc. Model # VU-40S Boiler #20185 (1966) (Natural Gas) (Igniters installed in 1994) (Natural Gas)	20 Million BTU/HR				
2-205 (B #3)	2-205 BH	Combustion Engineering, Inc. Model # VU-40S Boiler #19955 (1965) (Coal)	209 Million BTU/HR	Joy Manufacturing Co., Western Precipitation Division (Therm-O- Flex Filter)	2-205 H	PM PM-10 Pb HAP Solids	11/29/01 Amended 07/25/05
		Combustion Engineering, Inc. Model # VU-40S Boiler #19955 (1965) (Residual Oil)					
		Combustion Engineering, Inc. Model # VU-40S Boiler #19955 (1965) (Distillate Oil)					
		Combustion Engineering, Inc. Model # VU-40S Boiler #19955 (Igniters installed in 1994) (Natural Gas)	20 Million BTU/HR				

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity*	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date
2-205 (V #1)	2-205 BH	Riley Union (Riley-stoker) Dow Vaporizer #1 Type MH (April, 1978) (Natural Gas)	43 Million BTU/HR	-	-	-	11/29/01 Amended 07/25/05
		Riley Union (Riley-stoker) Dow Vaporizer #1 Type MH (April, 1978) (Distillate Oil)					
		Riley Union (Riley-stoker) Dow Vaporizer #1 Type MH (April, 1978) (Residual Oil)					
2-205 (V #2)	2-205 BH	Riley Union (Riley-stoker) Dow Vaporizer #2 Type MH (April, 1978) (Natural Gas)	43 Million BTU/HR	-	-	-	11/29/01 Amended 07/25/05
		Riley Union (Riley-stoker) Dow Vaporizer #2 Type MH (April, 1978) (Distillate Oil)					
		Riley Union (Riley-stoker) Dow Vaporizer #2 Type MH (April, 1978) (Residual Oil)					
2-205 (V #3)	2-205 BH	Struthers Wells dowtherm vaporizer #3 (1997) (Natural Gas)	22 Million BTU/HR	-	-	-	11/29/01 Amended 07/25/05
		Struthers Wells dowtherm vaporizer #3 (1997) (Distillate Oil)					
Process: Coal Handling System							
CH-01 CH-20 CH-23 CH-24 CH-03 CH-19 CH-P CH-02 CH-06 CH-07 CH-08	CH-01 CH-20 CH-23 CH-24 CH-03 CH-19 CH-P CH-02 CH-06 CH-07 CH-08	Coal Handling Equipment	100 tons per hour	-	-	-	-

CH-09(1A) CH-09(1B) CH-09(2) CH-09(3)	CH-09(1A) CH-09(1B) CH-09(2) CH-09(3)						
Silo 1A	-	Silo for Boiler #1	150 tons	-	-	-	-
Silo 1B	-	Silo for Boiler #1	150 tons	-	-	-	-
Silo 2	-	Silo for Boiler #2	190 tons	-	-	-	-
Silo 3	-	Silo for Boiler #3	190 tons	-	-	-	-
Process: Nylon Fiber Production Facility							
1-5 1-6 1-20 1-25 1-26 1-27	1-5 1-6 1-20 1-25 1-26 1-27	Polymer and/or Flake Production Equipment	-	Scrubber (INVISTA Design) (1979)	1-20	VOC	-
5-25-5-30	5-25 5-26 5-27 5-28 5-29 5-30	Nylon Spinning Equipment (1978)	-	-	-	-	11/29/01 Amended 07/25/05
5-32-5-35	5-32 5-33 5-34 5-35	Pre-Polymerizers (#1, #2, #3, #4) (1978) CP Area	-	-	-	-	11/29/01 Amended 07/25/05
5-36-5-39	5-36 5-37 5-38 5-39	Pre-Evaporators (#1, #2, #3, #4) (1978) CP Area	-	-	-	-	11/29/01 Amended 07/25/05
5-40-5-42	5-40 5-41 5-42	String-Up Exhausts (#1, #2, #3) (1978)	-	-	-	-	11/29/01 Amended 07/25/05

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity*	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date
Process: Lycra® Production Facility							
6-477	6-477	Lycra® Polymerization Process (1983)	-	-	-	-	11/29/01 Amended 07/25/05
6-480	6-480						
6-481	6-481						
6-488	6-488						
7-7	7-7						
7-76	7-76						
7-84	7-84						
7-250	7-250						
7-278	7-278						
7-349	7-349						
7-564	7-564						
7-604	7-604						
7-615	7-615						
7-633	7-633						
7-634	7-634						
7-653	7-653						

[illegible]

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity*	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date
Process: Lycra® Production Facility							
8-42	8-42	Lycra® Solvent Recovery Process (1983)	-	-	-	-	11/29/01 Amended 07/25/05
8-43	8-43						
8-44	8-44						
8-48	8-48						
8-51	8-51						
8-52	8-52						
8-53	8-53						
8-59	8-59						
8-75	8-75						
8-76	8-76						
8-78	8-78						
8-79	8-79						
8-80	8-80						
8-81	8-81						
8-86	8-86						
8-87	8-87						
8-88	8-88						
8-89	8-89						
8-194	8-194						
8-210	8-210						

*The Size/Rated capacity is provided for informational purposes only, and is not an applicable requirement.

EMISSIONS INVENTORY

A copy of the 2005 annual emission update is included in Attachment A. Emissions are summarized in the following tables.

Table II. 2005 Actual Criteria Pollutant Emissions

	Criteria Pollutant Emissions (tons/yr)				
	VOC	CO	SO ₂	PM-10	NO _x
Boiler 1	1.19	10.31	531.43	29.57	215.13
Boiler 2	0.58	5.00	253.82	13.81	205.53
Boiler 3	0.75	7.11	350.32	19.83	132.02
Vaporizer 1	0.20	3.46	113.28	8.04	29.77
Vaporizer 2	0.18	3.20	115.3	8.16	29.91
Vaporizer 3	0.01	0.12	0.00	0.01	0.07
Lycra Production Area	92.47	-	-	-	-
Solvent Recovery	2.10	-	-	-	-
Lycra Fugitive	20.86	-	-	-	-
Nylon Production Area	0.67	-	-	12.74	-
Dowtherm Losses	14.16	-	-	-	-
Coal Handling	-	-	-	1.28	-
Total	133.17	29.21	1364.16	92.84	612.42

Table III. 2005 Actual Hazardous Air Pollutant Emissions

Pollutant	Hazardous Air Pollutant Emissions (tons/yr)
Hydrogen Chloride	77.4
Hydrogen Fluoride	2.88

EMISSION UNIT APPLICABLE REQUIREMENTS

Powerhouse

Limitations

The following limitations are state BACT requirements from the minor NSR permit issued on 11/29/01 as amended 07/25/05. Please note that the condition numbers are from the 11/29/01 permit as amended 07/25/05, a copy of the permit is enclosed as Attachment B.

- Condition 19: Limit on the natural gas and distillate oil throughput for Dowtherm® vaporizer (Ref. 2-205(V#3)).
- Condition 20: Limit on the types of fuels to be combusted in the Dowtherm® vaporizer (Ref. 2-205(V#3)). Natural gas and distillate oil are the only approved fuels.
- Condition 21: Limit on the types of fuels to be combusted in the Dowtherm® vaporizers (Ref. 2-205(V#1) and Ref. 2-205(V#2)). Natural gas, distillate and residual oil are the only approved fuels.
- Condition 22: Limit on the types of fuels to be combusted in the boilers and the associated boiler igniters (Ref. 2-205(B#1), 2-205(B#2) and 2-205(B#3)). The approved fuels for the boilers are distillate oil, residual oil and coal. The approved fuel for the boiler igniters is natural gas.
- Condition 23: Limit on the sulfur content of the distillate oil to be burned in the Dowtherm® vaporizer (Ref. 2-205(V#3)).
- Condition 24: Limit on the sulfur content of the distillate and residual oil to be burned in the Dowtherm® vaporizers (Ref. 2-205(V#1) and Ref. 2-205(V#2)) and a limit on the sulfur content of the distillate oil, residual oil and coal to be burned in the boilers (Ref. 2-205(B#1), 2-205(B#2) and 2-205(B#3)).
- Condition 27: Boiler and Dowtherm® vaporizer emissions shall be controlled by proper operation and maintenance. Written operating procedures and a maintenance schedule will be maintained.
- Condition 28: Emission limit for sulfur dioxide from the powerhouse stack (Stack Ref. 2-205).
- Condition 29: Emission limits for criteria pollutants from the Dowtherm® vaporizer (Ref. 2-205(V#3)).
- Condition 30: Visible emission limit for the powerhouse stack (Stack Ref. 2-205)

of 20%.

Condition 38: Measures necessary in order to minimize the duration and frequency of excess emissions, with respect to air pollution control equipment, monitoring devices, and process equipment which affect such emissions.

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

9 VAC 5-40-900, Existing Source Standard for Particulate Matter (ACQR 1-6)
9 VAC 5-40-910, Existing Source Emission Allocation System
9 VAC 5-50-400 and 9 VAC 5-50-410, Standards of Performance for New and Modified Stationary Sources

The following conditions in the Title V permit were established pursuant to these Codes:

Condition III.A.10: Particulate matter emissions for the boilers and Dowtherm® vaporizers shall not exceed the limits specified below:

Boiler #1 (Ref. 2-205(B#1))	35.8 lbs/hr
Boiler #2 (Ref. 2-205(B#2))	38.1 lbs/hr
Boiler #3 (Ref. 2-205(B#3))	38.1 lbs/hr
Vaporizer #1 (Ref. 2-205(V#1))	7.9 lbs/hr
Vaporizer #2 (Ref. 2-205(V#2))	7.9 lbs/hr

Particulate matter emissions allocation for each of the fuel burning units of the fuel burning equipment installation was the designation of their portion of the maximum allowable particulate emissions from the fuel burning equipment installation when operating at total capacity. The maximum allowable particulate emissions from the fuel burning equipment installation was the product of the total capacity and the emission ratio determined in accordance with 9 VAC 5-40-900. The allocation of the maximum allowable particulate emissions was determined as follows:

$$E = 1.0906H^{-0.2594}$$

Where:

E = emission limit in lbs/MMBtu

H = the total capacity of the fuel burning equipment installation in MMBtu/hr

Therefore:

$$\begin{aligned}\text{Total capacity of boilers and vaporizers (H)} &= \text{Boiler 1} + \text{Boiler 2} + \text{Boiler 3} \\ &\quad + \text{Vaporizer 1} + \text{Vaporizer 2} \\ &= 196 + 209 + 209 + 43 + 43 \text{ MMBtu/hr} \\ &= 700 \text{ MMBtu/hr}\end{aligned}$$

$$\begin{aligned}\text{Total allowable emissions for installation (E)} &= 1.0906H^{-0.2594} \text{ lbs/MMBtu} \\ &= 1.0906((700)^{-0.2594}) \text{ lbs/MMBtu} \\ &= 0.182802 \text{ lbs/MMBtu}\end{aligned}$$

$$\text{Total allowable emissions: } 0.182802 \text{ lbs/MMBtu} \times 700 \text{ MMBtu/hr} = 127.96 \text{ lbs/hr}$$

Allocation of emissions is as follows:

$$\text{Boiler 1: } 127.96 \text{ lbs/hr} \times \frac{196 \text{ MMBtu/hr}}{(700 \text{ MMBtu/hr})} = 35.8 \text{ lbs/hr}$$

$$\text{Boiler 2: } 127.96 \text{ lbs/hr} \times \frac{209 \text{ MMBtu/hr}}{(700 \text{ MMBtu/hr})} = 38.1 \text{ lbs/hr}$$

$$\text{Boiler 3: } 127.96 \text{ lbs/hr} \times \frac{209 \text{ MMBtu/hr}}{(700 \text{ MMBtu/hr})} = 38.1 \text{ lbs/hr}$$

$$\text{Vaporizer 1: } 127.96 \text{ lbs/hr} \times \frac{43 \text{ MMBtu/hr}}{(700 \text{ MMBtu/hr})} = 7.9 \text{ lbs/hr}$$

$$\text{Vaporizer 2: } 127.96 \text{ lbs/hr} \times \frac{43 \text{ MMBtu/hr}}{(700 \text{ MMBtu/hr})} = 7.9 \text{ lbs/hr}$$

The following condition was established pursuant to 9 VAC 5-80-110 in order to provide additional assurance that the aforementioned existing emission standards for these boilers are met:

Condition III.A.2: Particulate emissions from the boilers (Ref. 2-205(B#1), 2-205(B#2) and 2-205(B#3) shall be controlled by a baghouse when firing coal. The baghouse shall be provided with adequate access for inspection.

Monitoring and Recordkeeping

The monitoring and recordkeeping requirements in Conditions 25, 26, 27, 32 and Attachment A of the minor new source review permit have been modified and incorporated into the Title V permit.

Conditions III.A.3, III.A.4 and III.A.5 include restrictions on fuel type to be burned in each boiler and Dowtherm® vaporizer. The likelihood of violating these applicable requirements is rare because the fuels specified are the only fuels which the boilers and Dowtherm® vaporizers

are designed to burn. Periodic monitoring consisting of recordkeeping of fuel type burned in each boiler is sufficient to provide reasonable assurance of compliance with these requirements.

Conditions III.A.6 and III.A.7 contain limits on the coal and oil sulfur content to be burned in the boilers and Dowtherm® vaporizers. Recordkeeping of sulfur content including fuel certifications provides reasonable assurance of compliance with this requirement.

Condition III.A.8 contains an hourly sulfur dioxide limit of 788 pounds per hour for the powerhouse stack (Stack Ref. 2-205). Attachment A of the minor NSR permit dated 11/29/01 amended 07/25/05 (Attachment B of this document) provides a detailed description of periodic monitoring, as detailed in Conditions III.B.5 and III.B.6, necessary to ensure compliance with this emission limit. The periodic monitoring requires that INVISTA calculate its actual powerhouse stack sulfur dioxide emissions each hour based on a combination of DEQ-approved emission factors and actual operating parameters. If the total powerhouse stack SO₂ emissions (SO_{2total}) are equal to or greater than 591.0 pounds per hour for any single hour, a project shall be initiated for timely installation of a continuous emission monitor (CEM). These monitoring requirements are coupled with a requirement in Condition III.C.3 for the facility to conduct a performance test for sulfur dioxide matter in accordance with EPA Method 6 (40 CFR Part 60, Appendix A) to demonstrate compliance with the hourly emission limit. The tests shall be performed once each permit term. These requirements satisfy periodic monitoring.

Condition III.A.9 contains annual criteria pollutant emission limits for the 22 MMBTU/hr Dowtherm® vaporizer (Ref. 2-205(V#3)) which are based on natural gas and oil emission factors and throughput limits 156 x 10⁶ cubic feet of natural gas per year and 1,182,600 gallons of distillate oil per year established in Condition III.A.1. Calculations have been included in Attachment C to demonstrate that if the 22 MMBTU/hr Dowtherm® vaporizer (Ref. 2-205(V#3)) combusts all that is allowed in the permit, then the permit limits will not be violated. Therefore, as long as the fuel throughput limit is not violated, there is very little chance that the criteria pollutant emission limits will be violated. Recordkeeping demonstrating compliance with the fuel throughput limits provides reasonable assurance of compliance with the annual criteria pollutant emission limits, satisfying the periodic monitoring requirement. The facility will also be required to keep records of the DEQ-approved, pollutant-specific emission factors and the equations for calculating emissions.

Condition III.A.10 contains hourly particulate emission limits for the boilers (Ref. 2-205(B#1), 2-205(B#2) and 2-205(B#3) and Dowtherm® vaporizers (Ref. 2-205(V#1) and Ref. 2-205(V#2)). These units are capable of firing multiple fuels. The boilers can fire coal, distillate and residual oil, and natural gas. The Dowtherm® vaporizers can fire distillate and residual oil. As a result, separate calculations are necessary for these fuels to demonstrate compliance with the particulate limits for each fuel scenario.

Table IV provides a summary of the maximum expected particulate emissions from each boiler using the EPA AP-42 coal emission factors:

Table IV. Particulate Emissions from Coal-Firing

Emission Unit	Fuel Type	Capacity of Fuel Burning Equipment (MMBtu/hr)	Maximum Hourly Throughput (tons/hr)	AP-42 Emission Factor for PM (lbs/ton) ⁽¹⁾	Baghouse Control Efficiency (%)	Maximum Emissions of PM (lbs/hr)	Calculated PM Emission Standard (lbs/hr)
Boiler 1	Bituminous Coal	196	7.54	150	99	11.3	35.8
Boiler 2		209	8.04			12.1	38.1
Boiler 3		209	8.04			12.1	38.1

(1) Factor equals 10 times a 15% ash content.

As can be seen in Table IV, which assumes a coal ash content of 15 percent (a conservative estimate based on historical data which indicates an average ash content of 10 percent), a properly operating baghouse provides reasonable assurance that the hourly particulate emission limits will not be violated when burning coal. Condition III.A.2 requires that particulate emissions from the boilers when firing coal be controlled by a baghouse. The baghouse controlling particulate emissions from the boilers when firing coal will be subject to Compliance Assurance Monitoring (CAM) plan as described in the next section. The facility is required to keep records of the most recent DEQ-approved emission factors and the equations used to demonstrate compliance with the limits in Condition III.A.10.

As previously stated, Conditions III.A.10 contains hourly particulate emission limits for the boilers and Dowtherm® vaporizers which may also burn distillate, residual oil or natural gas. The worst-case calculated potential particulate matter emissions from the operation of each boiler burning oil or natural gas using AP-42 emission factors are shown in Table V:

Table V. Particulate Emissions from Oil-Firing

Emission Unit	Worst Case Fuel Type	Capacity of Fuel Burning Equipment (MMBtu/hr)	Maximum Hourly Throughput (gals/hr)	AP-42 Emission Factor for PM (lbs/1000 gal)	Baghouse Control Efficiency (%)	Maximum Emissions of PM (lbs/hr)	Calculated PM Emission Standard (lbs/hr)
Boiler 1	No. 6 Fuel Oil	196	1307	9.19 S + 3.22	N/A	28.2	35.8
Boiler 2		209	1393			30.1	38.1
Boiler 3		209	1393			30.1	38.1
Vaporizer 1		43	287			6.2	7.9
Vaporizer 2		43	287			6.2	7.9

Demonstrating compliance with the fuel sulfur content limits in Conditions III.A.6 and III.A.7 provides reasonable assurance that the hourly particulate emission limits will not be violated when burning natural gas, distillate or residual oil. The facility is required to monitor fuel purchase records (including sulfur content) and to properly operate and maintain the boilers and vaporizers (including training of boiler and vaporizer operators).

In order to provide further assurance that the particulate matter emission limits contained in Condition III.A.10 are met, INVISTA shall conduct a once per permit term performance test for particulate matter, as detailed in Condition III.C.2. The test shall be conducted in accordance with EPA Method 5 (40 CFR Part 60, Appendix A). The test shall be performed on a once per permit term basis.

Actual criteria pollutant emissions from the boilers (#1, #2 and #3) when burning oil or natural gas will be calculated using the following equations.

- a. For fuel oil combustion:

$$E = F \times O$$

Where:

E = Emission rate (lb/time period)
 F = Pollutant specific emission factors as follows:

		#1 / #2 Fuel Oil	#4 Fuel Oil	#5 Fuel Oil	#6 Fuel Oil
PM	=	2.0 lb/1000 gal	7.0 lb/1000 gal	10.0 lb/1000 gal	(9.19S+3.22) lb/1000 gal ⁽¹⁾
PM-10	=	1.0 lb/1000 gal	6.0 lb/1000 gal	8.6 lb/1000 gal	(8.03S+2.65) lb/1000 gal ⁽¹⁾
SO ₂	=	157S lb/1000 gal ⁽¹⁾	150S lb/1000 gal ⁽¹⁾	157S lb/1000 gal ⁽¹⁾	157S lb/1000 gal ⁽¹⁾
CO	=	5.0 lb/1000 gal	5.0 lb/1000 gal	5.0 lb/1000 gal	5.0 lb/1000 gal
NO _x	=	24.0 lb/1000 gal	47.0 lb/1000 gal	47.0 lb/1000 gal	40.0 lb/1000 gal
(for Boilers #1 and #3) ²					
NO _x	=	24.0 lb/1000 gal	47.0 lb/1000 gal	47.0 lb/1000 gal	47.0 lb/1000 gal
(for Boiler #2)					

⁽¹⁾ S = weight percent sulfur

⁽²⁾ = boilers #1 and #3 are equipped with low NO_x burners

O = fuel oil consumed (1000 gal/time period)

- b. For natural gas combustion:

$$E = F \times N$$

Where:

E = Emission Rate (lb/time period)
 F = Pollutant specific emission factors as follows:

TSP	=	7.6 lb/million ft ³
PM-10	=	7.6 lb/million ft ³
SO ₂	=	0.6 lb/million ft ³
NO _x	=	140.0 lb/million ft ³
(for Boilers #1 and #3) ³		
NO _x	=	280.0 lb/million ft ³
(for Boiler #2)		
CO	=	84.0 lb/million ft ³

⁽³⁾ = boilers #1 and #3 are equipped with low NO_x burners

N = Natural gas consumed (million ft³/time period)

Actual criteria pollutant emissions from the vaporizers (#1, #2 and #3) when burning oil or natural gas will be calculated using the following equations.

- a. For fuel oil combustion:

$$E = F \times O$$

Where:

E = Emission rate (lb/time period)
 F = Pollutant specific emission factors as follows:

		#1 / #2 Fuel Oil	#4 Fuel Oil	#5 Fuel Oil	#6 Fuel Oil
PM	=	2.0 lb/1000 gal	7.0 lb/1000 gal	10.0 lb/1000 gal	(9.19S+3.22) lb/1000 gal ⁽¹⁾
PM-10	=	1.0 lb/1000 gal	6.0 lb/1000 gal	8.6 lb/1000 gal	(8.03S+2.65) lb/1000 gal ⁽¹⁾
SO ₂	=	142S lb/1000 gal ⁽¹⁾	150S lb/1000 gal ⁽¹⁾	157S lb/1000 gal ⁽¹⁾	157S lb/1000 gal ⁽¹⁾
CO	=	5.0 lb/1000 gal	5.0 lb/1000 gal	5.0 lb/1000 gal	5.0 lb/1000 gal
NO _x	=	20.0 lb/1000 gal	20.0 lb/1000 gal	55.0 lb/1000 gal	55.0 lb/1000 gal

⁽¹⁾ S = weight percent sulfur

O = fuel oil consumed (1000 gal/time period)

b. For natural gas combustion:

$$E = F \times N$$

Where:

E = Emission Rate (lb/time period)
 F = Pollutant specific emission factors as follows:

PM	=	7.6 lb/million ft ³
PM-10	=	7.6 lb/million ft ³
SO ₂	=	0.6 lb/million ft ³
CO	=	84.0 lb/million ft ³
NO _x	=	50.0 lb/million ft ³
(for Boilers #1 and #3) ²		
NO _x	=	100.0 lb/million ft ³
(for Boiler #2)		

⁽²⁾ = boilers #1 and #3 are equipped with low NO_x burners

N = Natural gas consumed (million ft³/time period)

Periodic monitoring required to reasonably assure compliance with the visible emission limitation for the powerhouse stack (Stack Ref. 2-205) consists of a daily inspection of the stack to determine the presence of visible emissions. Since this requirement is included in the Compliance Assurance Monitoring (CAM) plan for the baghouse (2-205 H) as described in the next section, no separate condition is included for monitoring of powerhouse stack.

Condition III.A.12 requires that emissions from each boiler and Dowtherm® vaporizer be controlled by proper operation and maintenance and that boiler and Dowtherm® vaporizer operators be trained in the proper operation of the equipment. The requirement in Condition III.B.9 to maintain boiler and vaporizer operator training records and good operating instructions for the boilers provides reasonable assurance that the boilers will be operated and maintained properly by the facility. This satisfies the periodic monitoring requirement.

Compliance Assurance Monitoring (CAM)

The coal fired boilers (Ref. 2-205(B#1), 2-205(B#2) and 2-205(B#3)) are subject to CAM for particulate matter as potential pre-controlled emissions are greater than 100 tpy and the boilers use fabric filter as a control device. Although, SO₂ emissions are also greater than 100 tpy,

CAM does not apply for SO₂ because there is no control device for this pollutant. CAM does not apply to any other emission units, as none of the other units has an add-on control device.

The CAM plan (Attachment D) includes the following:

- Visible emissions have been selected as the first indicator because they are indicative of good operation and maintenance of a baghouse. If the baghouse is not functioning properly, visible emissions will be present and there is a chance that the facility is in danger of not meeting the emission limit. Therefore, visible emissions are an acceptable performance indicator.
- The daily visible emission observations of the baghouse will satisfy the CAM requirement for the visible emission limitation. Frequent checks for visible emissions will limit malfunctions of the control equipment. As long as the control equipment is operating properly, there is little likelihood of violating the visible emission limitation. The baghouse will limit the amount of particulate that is emitted, thereby limiting visible emissions. The permittee shall conduct daily inspection of the powerhouse stack to determine the presence of visible emissions. The powerhouse stack is chosen since all the boilers and vaporizers share this common stack. If during the inspection visible emissions are observed, the permittee has one of the following options: (1) The permittee can accept this as an excursion, or (2) the permittee has option to conduct a Method 9 VEE to determine whether an excursion has occurred. If the facility chooses a Method 9 VEE, then the excursion is defined as an average opacity greater than 20% during one six minute period in any hour. Whichever option the permittee chooses, a Quality Improvement Plan (QIP) shall be developed if two excursions occur within a two week period from the indicator 1-A (opacity) or single excursion occurs from the indicator 1-B (VEE) as specified in the CAM Plan.
- The continuous measurement of pressure drop through the baghouse satisfies the second CAM indicator for the baghouse. Continuous measurement of the pressure drop across the baghouse verifies the operational status of the baghouse. An excursion is defined as pressure drops below 1" water column and above 8" water column. Excursions trigger an inspection, corrective action and a reporting requirement.

Testing

Condition 4 of the November 29, 2001 as amended July 25, 2005 minor new source review permit is incorporated into the Title V permit. Specifically, the facility is required to construct the facility so as to allow for emissions testing at any time using appropriate methods. Upon request from the Department, test ports shall be provided at the appropriate locations.

The permit also requires INVISTA to conduct performance tests for particulate matter (PM) and

sulfur dioxide to demonstrate compliance with the emission limits contained in Conditions III.A.8 and III.A.10. The tests shall be conducted once each permit term, at a frequency not to exceed five years from the previous performance tests that demonstrated compliance with the PM and SO₂ emission limits. The tests shall be conducted on a once per permit term frequency.

In the event that the total powerhouse stack SO₂ emissions (SO_{2total}) are equal to or greater than 591.0 pounds per hour for any single hour, a CEM shall be installed within one calendar year. A performance evaluation for the CEM (Condition III.C.3) shall be conducted within 60 days after CEM installation. Verification of proper operation of the CEM shall include completion of the manufacturer's written requirements or recommendations for installation, operation, and calibration of the device. The permit also requires that CEM data availability conform to the requirements contained in NSPS Subpart Db which is applicable to similarly sized coal-fired boilers.

Additionally, a table of test methods has been included in the permit if testing is performed. The Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

Reporting

Condition III.D.1 requires that INVISTA submit fuel quality reports to the Director, Valley Region, within 30 days after the end of each semi-annual period ending June 30 and December 31. If no shipments of distillate oil were received during the semi-annual period, the semi-annual report shall consist of the dates included in the semi-annual period and a statement that no oil was received during the semi-annual period. A copy of each report shall be submitted to EPA.

Condition III.D.2 requires that INVISTA furnish written notification the Director, Valley Region, of the anticipated date of the CEM performance evaluation postmarked not less than 30 days prior to such date. A copy of this notification shall be submitted to EPA.

Streamlined Requirements

9 VAC 5-40-930, Existing Source Standard for Sulfur Dioxide (ACQR 1-6)
9 VAC 5-40-940, Existing Source Standard for Visible Emissions
9 VAC 5-50-80, New Source Standard for Visible Emissions
Condition 31 of the 11/29/01 Minor NSR Permit as Amended 07/25/05

The visible emission limitations in 9 VAC 5-40-940 and 9 VAC 5-50-80 have not been included for the powerhouse stack (Stack Ref. 2-205) because the permit limit of twenty percent (20%) opacity is more stringent than the regulatory limit of twenty percent (20%) opacity, except for one six-minute period in any one hour not to exceed thirty percent (30% - new sources) and sixty percent (60% - existing sources).

The existing source standard for the powerhouse stack has been streamlined. The 788 pound per hour limit on the powerhouse stack is more stringent than that required by 9 VAC 5-40-930.

Specifically, the requirement allows 1848 pounds per hour of sulfur dioxide (2.64 times the capacity of the fuel burning equipment installation) for the boilers and Dowtherm® vaporizers (Ref. 2-205(V#1) and Ref. 2-205(V#2)).

Condition 31 of the minor NSR permit has been streamlined. All applicable requirements for the Dowtherm® vaporizer (Ref. 2-205(V#3)) contained in 40 CFR 60, Subpart Dc have been included in the Title V permit. Therefore, this condition was deemed unnecessary. The specific applicable requirements of the NSPS are as follows:

- Fuel sulfur limit of 0.3% (Condition III.A.7)
- Fuel certifications (Condition III.B.8)
- Semi-annual reports (Condition III.D.1)

Coal Handling

Limitations

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

- 9 VAC 5-40-260, Existing Source Standard for Particulate Matter (AQCR 1-6)
- 9 VAC 5-50-80, New Source Standard for Visible Emissions

9 VAC 5-50-80 was determined to be applicable to the coal handling emission units because documentation of construction dates for these units were unavailable.

The following conditions in the Title V permit were established pursuant to these Codes:

- | | |
|-------------------|---|
| Condition IV.A.1: | Particulate emissions from the coal handling equipment operations shall not exceed the following:

Coal Handling Equipment (100 tons per hour) = 51.3 lbs/hr

All limits were determined by the equation $E = 55.0P^{0.11} - 40$, where E is the emission limit in lbs/hr and P is the process weight rate in tons/hr. |
| Condition IV.A.3: | Visible fugitive emissions from the coal handling equipment shall not exceed twenty percent (20%) opacity except during one six-minute period in any one hour in which visible fugitive emissions shall not exceed sixty percent (60%) opacity. |

The following conditions were established pursuant to 9 VAC 5-80-110 in order to provide assurance that the aforementioned emission standards for the coal handling activities are met.

Condition numbers refer to those contained in the Title V permit.

- | | |
|-------------------|---|
| Condition IV.A.2: | Requirements for controlling fugitive dust emissions from the coal handling equipment. |
| Condition IV.A.4: | Measures necessary in order to minimize the duration and frequency of excess emissions, with respect to air pollution control equipment, monitoring devices, and process equipment which affect such emissions. |

Monitoring and Recordkeeping

The permit contains a requirement for INVISTA to perform daily inspection and maintenance activities for the coal handling equipment operations. The activities will include inspecting and maintaining the water spray systems or equivalent used to control fugitive emissions from the coal handling activities and a visual survey of the coal handling activities for any sources of excessive fugitive emissions. For the purpose of this survey, excessive emissions are considered to be any visible emissions that leave the plant site boundaries. If sources of excess fugitive emissions are identified during the survey, the permittee shall use water or a suitable chemical treatment to minimize the fugitive emissions. If water is used to control the fugitive dust emissions, the permittee shall take care not to create a water quality problem from surface water run-off. These requirements reasonably assure compliance with both the visible emissions limit and emission limit for coal handling activities.

The permit includes requirements for maintaining records of all monitoring and testing required by the permit. These records include:

- The pollutant-specific emission factors and equations used to demonstrate compliance with Condition IV.A.1; and
- Inspection records as required by Conditions IV.B.1.

Compliance Assurance Monitoring (CAM)

CAM does not apply to any emission units, as none of these units has an add-on control device.

Testing

A table of test methods has been included in the permit if testing, in addition to the testing and monitoring specified in this permit, is performed pursuant to a request from DEQ. The Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

Reporting

No specific reporting has been included in the permit for the coal handling operations.

Streamlined Requirements

There are no streamlined requirements for the coal handling operations.

Lycra® Production Facility

Limitations

The following limitations are state BACT requirements from the minor NSR permit issued on November 29, 2001 as amended July 25, 2005. Please note that the condition numbers are from 11/29/01 permit as amended 07/25/05, a copy of the permit is enclosed as Attachment B.

- Condition 3: Volatile organic compound (VOC) emissions from the Lycra® (Classic and NAX) spinning machines shall be controlled by brine-cooled condensers.
- Condition 6: VOC emissions from the Lycra® production facility shall not exceed 37.6 lbs/hr and 164.7 tons/yr.
- Condition 38: Measures necessary in order to minimize the duration and frequency of excess emissions, with respect to air pollution control equipment, monitoring devices, and process equipment which affect such emissions.

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

9 VAC 5-50-80, New Source Standard for Visible Emissions

The following conditions in the Title V permit were established pursuant to these Codes:

- Condition V.A.3: Visible emissions from each Lycra® production facility exhaust shall not exceed 20% opacity except during one six-minute period in any one hour in which visible emissions shall not exceed 30% opacity.

Monitoring and Recordkeeping

The monitoring and recordkeeping requirements in Condition 6 of the minor new source review permit have been modified and incorporated into the Title V permit in order to meet Part 70 requirements.

Condition V.A.2 contains hourly and annual VOC emission limits for the Lycra® production facility. The permittee shall conduct quarterly performance tests for VOC in accordance with NIOSH Method 2004 or INVISTA Lab Procedure SP-0905.211-01 to demonstrate compliance

with the VOC emission limits in Condition V.A.2.

The facility is also required to control VOC emissions from the Lycra® production facility by brine-cooled condensers. Each condenser operates as inherent process equipment to recover solvent. In order to ensure consistent proper operation of these condensers, INVISTA shall conduct and record the results of a daily inspection of each brine-cooled condenser. If the outlet gas temperature is not within the manufacturer's recommended range, timely corrective action shall be taken such that the brine-cooled condenser resumes proper operation.

INVISTA shall also conduct and record the results of a daily inspection. If during the inspection, the equipment is not operating according to manufacturer's recommendations, timely corrective action shall be taken such that the equipment resumes proper operation.

The requirement to inspect and maintain condensers operation provides additional assurance that the Lycra® production facility is operating properly.

The combination of all of these requirements provide reasonable assurance of compliance with the emission limits for the Lycra® production facility.

INVISTA shall conduct visible emissions inspections on Lycra® production facility exhausts 6-473 through 6-484, 6-488, 7-7, 7-29, 7-66 through 7-68, 7-76, 7-83, 7-84, 7-247, 7-250, 7-278, 7-291, 7-292, 7-303, 7-304, 7-309, 7-348, 7-349, 7-564, 7-604, 7-615, 7-633, 7-634, 7-649, and 7-652 through 7-654 in accordance with the following procedures and frequencies:

- At a minimum of once per week, the permittee shall determine the presence of visible emissions. If during the inspection visible emissions are observed from a stack(s), a visible emissions evaluation (VEE) shall be conducted for the stack(s) in accordance with 40 CFR Part 60, Appendix A, EPA Method 9. The VEE shall be conducted for a minimum of six (6) minutes. If any of the observations exceed twenty percent (20%), the VEE shall be conducted for a total of sixty (60) minutes.
- All visible emissions inspections shall be performed when the Lycra® production facility is operating. In the event of a process shutdown for a consecutive period of one week or more, visible inspections may be discontinued until the process becomes operational.
- If visible emissions inspections conducted during twelve (12) consecutive weeks show no visible emissions for a particular stack, the permittee may reduce the monitoring frequency to once per month for that stack. Anytime the monthly visible emissions inspections show visible emissions, or when requested by DEQ, the monitoring frequency shall be increased to once per week for that stack.
- All observations, VEE results, process shutdowns and corrective actions taken shall be recorded.

These requirements reasonably assure compliance with the visible emission limit for the Lycra® production facility. Historically, no visible emission violations have been recorded for this

process. The exhausts selected for observation represent the vast majority of emissions from the process and provide a reasonable and sufficient number of sampling points to ascertain compliance with the visible emissions standard. Additionally, the process has a low likelihood of producing particulate emissions which cause visible emissions. Therefore, the likelihood of violating the standard is remote.

Compliance Assurance Monitoring (CAM)

CAM does not apply to any emission unit, as none of the units have add-on control devices. The brine-cooled condensers are not considered as control devices as each condenser operates as inherent process equipment to recover solvent.

Testing

Condition 4 of the November 29, 2001 as amended July 25, 2005 permit is incorporated. Specifically, the facility is required to construct the facility so as to allow for emissions testing at any time using appropriate methods. Upon request from the Department, test ports shall be provided at the appropriate locations.

INVISTA will conduct quarterly performance tests for VOC in accordance with NIOSH Method 2004 or INVISTA Lab Procedure SP-0905.211-01.

A table of test methods has been included in the permit if testing is performed. The Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

Reporting

INVISTA shall also submit quarterly performance tests for VOC as required by Condition V.E to the Director, Valley Region, in accordance with a schedule outlined in the permit.

Streamlined Requirements

9 VAC 5-40-80 (Existing Source Standard for Visible Emissions) has been streamlined. 9 VAC 5-50-80 (New Source Standard for Visible Emissions) was determined to be applicable to the Lycra[®] production facility because documentation of construction dates for individual stack exhausts were unavailable.

Nylon Fiber Production Facility

Limitations

The following limitations are state BACT requirements from the minor NSR permit issued on November 29, 2001 as amended July 25, 2005. Please note that the condition numbers are from the November 29, 2001 as amended July 25, 2005 permit; a copy of the permit is enclosed as Attachment B.

- Condition 9 Particulate emissions from the bulking chests shall be controlled by using low-smoke finish.
- Condition 12: A change to the polymer supply pumps or polymer supply pump system may require a permit to modify and operate.
- Condition 13: The total polymer supply pump rate shall not exceed 132.7 revolutions per minute (rpm).
- Condition 14: Particulate matter emissions from the Nylon fiber production facility shall not exceed 8.6 lbs/hr and 37.7 tons/yr.
- Condition 15: Visible emissions from each of the Nylon equipment exhausts (Stack Ref. 5-25 through 5-30 and 5-32 through 5-42) shall not exceed 10 percent opacity.
- Condition 38: Measures necessary in order to minimize the duration and frequency of excess emissions, with respect to air pollution control equipment, monitoring devices, and process equipment which affect such emissions.

The following condition was established pursuant to 9 VAC 5-80-110 in order to provide additional assurance that the aforementioned emission standards for the Nylon fiber production facility are met:

- Condition VI.A.2: VOC emissions from the Nylon fiber production facility shall be controlled by a primary reactor scrubber.

Monitoring and Recordkeeping

The monitoring and recordkeeping requirements in Conditions 10 and 16 of the minor new source review permit have been modified and incorporated into the Title V permit in order to meet Part 70 requirements.

INVISTA is required to control particulate emissions from the Nylon fiber production facility, specifically the bulking chests, by using low-smoke finish.

Condition VI.A.4 contains hourly and annual particulate emission limits for the Nylon fiber production facility. These limits are based on the total polymer supply pump rate of 132.7 revolutions per minute (rpm) established in Condition VI.A.3. If the total polymer supply pump rate shall not exceed 132.7 rpm, there is reasonable assurance that the emission limits are not violated. The facility will also be required to keep records of the maximum total polymer supply pump rate. INVISTA is also required to keep records of DEQ-approved, pollutant-specific emission factors and the equations used to demonstrate compliance with these limits.

INVISTA is also required to control VOC emissions through the use of a scrubber. The control of VOC emissions from this process indirectly controls particulate emissions because VOCs may also form condensable particulate emissions when released to the atmosphere. INVISTA shall conduct and record the results of a daily inspection of the scrubber. If during the inspection, the scrubber liquid flow rate is not within the manufacturer's recommendations, timely corrective action shall be taken such that the scrubber resumes proper operation.

The requirement to inspect and maintain proper control device operation provides additional assurance that the Nylon fiber production facility is operating properly and that the particulate emission limits are met.

The combination of all of these requirements provides reasonable assurance of compliance with the emission limits for the Nylon fiber production facility.

INVISTA shall conduct visible emissions inspections on Nylon fiber production facility exhausts 1-5, 1-6, 1-20, 1-25 through 1-27, 5-25 through 5-30, and 5-32 through 5-42 in accordance with the following procedures and frequencies:

- At a minimum of once per week, the permittee shall determine the presence of visible emissions. If during the inspection visible emissions are observed from a stack(s), a visible emissions evaluation (VEE) shall be conducted for the stack(s) in accordance with 40 CFR Part 60, Appendix A, EPA Method 9. The VEE shall be conducted for a minimum of six (6) minutes. If any of the observations exceed ten percent (10%), the VEE shall be conducted for a total of sixty (60) minutes.
- All visible emissions inspections shall be performed when the Nylon fiber production facility is operating. In the event of a process shutdown for a consecutive period of one week or more, visible inspections may be discontinued until the process becomes operational.
- If visible emissions inspections conducted during twelve (12) consecutive weeks show no visible emissions for a particular stack, the permittee may reduce the monitoring frequency to once per month for that stack. Anytime the monthly visible emissions inspections show visible emissions, or when requested by DEQ, the monitoring frequency shall be increased to once per week for that stack.
- All observations, VEE results, process shutdowns and corrective actions taken shall be recorded.

These requirements reasonably assure compliance with the visible emission limit the Nylon fiber production facility. The exhausts selected for observation represent the vast majority of emissions from the process and provide a reasonable and sufficient number of sampling points to ascertain compliance with the visible emissions standard. Historically, no visible emission violations have been recorded for this process. Therefore, the likelihood of violating the standard is remote.

Compliance Assurance Monitoring (CAM)

The primary salt reactor scrubber controlling VOC from the Nylon fiber production facility is not subject to CAM as potential pre-control emissions are less than 100 tpy. CAM does not apply to any other emission units, as none of the other units have add-on control devices.

Testing

Condition 11 of the November 29, 2001 as amended July 25, 2005 permit is incorporated. Specifically, the facility is required to construct the facility so as to allow for emissions testing at any time using appropriate methods. Upon request from the Department, test ports shall be provided at the appropriate locations. No other specific testing has been included in the permit for the Nylon fiber production facility.

A table of test methods has been included in the permit if testing is performed. The Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

Reporting

No specific reporting has been included in the permit for the Nylon fiber production facility.

Streamlined Requirements

9 VAC 5-40-80 (Existing Source Standard for Visible Emissions) and 9 VAC 5-50-80 (New Source Standard for Visible Emissions) have been streamlined. The permitted opacity limit of 10 percent (10%) is more stringent than these standards.

Hazardous Air Pollutants

Limitations

INVISTA is a major source for hazardous air pollutants. The Maximum Achievable Control Technology Standard (MACT) for Industrial, Commercial and Institutional Boilers and Process Heaters (Subpart DDDDD) under 40 CFR Part 63 was promulgated on September 13, 2004. INVISTA must comply with this subpart no later than September 13, 2007. The following “place holder” language has been established pursuant to requirements contained in 40 CFR Part 63 Subpart DDDDD:

Condition VII.A

Except where this permit is more restrictive, existing boilers and process heaters ((2-205(B#1), 2-205(B#2), 2-205(B#3), 2-205(V#1), 2-205(V#2) and 2-205(V#3))shall comply with 40 CFR Part 63 Subpart DDDDD (Industrial/ Commercial/ Institutional Boilers and Process Heater NESHA) no later than September 13, 2007. New industrial boilers and process heaters must comply with the final rule upon startup New units

have up to six months after startup to demonstrate compliance with 40 CFR Part 63 Subpart DDDDD.

Monitoring and Recordkeeping

Condition VII.B requires that the permittee record and retain all information necessary to determine compliance with 40 CFR Part 63 Subpart DDDDD. This generic requirement provides reasonable assurance that the future applicable standards will be met. Specific requirements will be incorporated in the Title V permit after the applicable compliance dates.

Testing

No specific testing has been included in the permit for hazardous air pollutants.

Reporting

All notifications required by 40 CFR 63.7(b) and (c), 63.8 (e), (f)(4) and (6), and 63.9 (b) through (h) and 40 CFR Part 63 Subpart DDDDD shall be provided by the dates specified, unless the permittee obtains federally enforceable limits on its facility-wide emissions of HAPs to below major-source thresholds prior to the notification dates specified. Notifications shall be submitted to the Director, Valley Region. A copy of each notification shall be provided to EPA Region III, to the attention of the Industrial/Commercial/Institutional Boilers and Process Heater NESHAP Coordinator. No other specific reporting has been included in the permit for the hazardous air pollutant conditions.

Streamlined Requirements

There are no streamlined requirements for the hazardous air pollutant conditions.

GENERAL CONDITIONS

The permit contains general conditions required by 40 CFR Part 70 and 9 VAC 5-80-110, that apply to all Federal-operating permit sources. These include requirements for submitting semi-annual monitoring reports and an annual compliance certification report. The permit also requires notification of deviations from permit requirements or any excess emissions, including those caused by upsets, within one business day.

STATE ONLY APPLICABLE REQUIREMENTS

INVISTA has requested that all toxic conditions and limitations included in the November 29, 2001 as amended July 25, 2005 minor NSR permit be included in the “state only” section of the Title V permit. These limits are currently contained in the state-only section of the November 29, 2001 as amended July 25, 2005 minor NSR permit. Therefore, it is permissible to include these requirements in the state enforceable section of the Title V permit.

FUTURE APPLICABLE REQUIREMENTS

INVISTA is a major source for hazardous air pollutants. The Maximum Achievable Control Technology Standard (MACT) for Industrial, Commercial and Institutional Boilers and Process Heaters (Subpart DDDDD) under 40 CFR Part 63 and 9 VAC 5 Chapter 60 was promulgated on September 13, 2004. INVISTA must comply with this subpart no later than September 13, 2007. The “place holder” language has been established pursuant to requirements contained in 40 CFR Part 63 Subpart DDDDD.

INAPPLICABLE REQUIREMENTS

INVISTA did not identify any inapplicable requirements in their application. Therefore, no inapplicable requirements are included in the permit.

DEQ reviewed the applicability of 40 CFR Part 60, Subpart D – Standards of Performance for Fossil Fuel-Fired Generators. The steam generating units present at the facility each have a heat input rate of less than 250 MMBtu/hr. Therefore, no emission units at the facility are subject to NSPS Subpart D.

DEQ reviewed the applicability of 40 CFR Part 60, Subpart Da – Standards of Performance for Electric Utility Steam Generating Units. The steam generating units present at the facility each have a heat input rate of less than 250 MMBtu/hr. Therefore, no emission units at the facility are subject to NSPS Subpart Da.

DEQ reviewed the applicability of 40 CFR Part 60, Subpart Db – Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units as the regulation pertains to INVISTA’s four boilers. All of the boilers and vaporizers 1 and 2 commenced construction prior to June 19, 1984, and have not been modified or reconstructed after the applicability date. Therefore, 40 CFR Part 63, Subpart Db is not applicable. Similarly, 40 CFR Part 63, Subpart Dc is also not applicable to above mentioned emission units since the effective date is June 9, 1989. However, Vaporizer #3 was constructed after June 9, 1989, and, therefore is subject to NSPS Subpart Dc. All the applicable requirements of this subpart have been included in the Title V permit.

DEQ reviewed the applicability of 40 CFR Part 60, Subpart K. No petroleum liquid storage vessel at the facility which has a storage capacity of greater than 40,000 gallons has been constructed, reconstructed or modified between June 11, 1973 and May 18, 1978. As a result, 40 CFR 60 Subpart K does not apply.

DEQ reviewed the applicability of 40 CFR Part 60, Subpart Ka. No petroleum liquid storage vessel at the facility which has a storage capacity of greater than 40,000 gallons have been constructed, reconstructed or modified between May 19, 1978 and July 22, 1984. As a result, 40 CFR 60 Subpart Ka does not apply.

DEQ reviewed the applicability of 40 CFR Part 60, Subpart Kb. The vapor pressures of the

liquids stored in storage vessel at the facility are 0.2 kPa, which is below the applicability threshold. As a result, 40 CFR 60 Subpart Kb does not apply.

DEQ reviewed the applicability of 40 CFR Part 60, Subpart Y – Coal Preparation Plants. The coal handling system was constructed before October 24, 1974, and no modification or reconstruction, as defined in 40 CFR 60.14 and 40 CFR 60.15, has occurred since that date. As a result, 40 CFR 60, Subpart Y does not apply.

DEQ reviewed the applicability of 40 CFR Part 60, Subpart HHH – Standards of Performance for Synthetic Fiber Production Facilities. INVISTA does not use a solvent-spun synthetic fiber process. As a result, 40 CFR 60, Subpart HHH does not apply.

DEQ reviewed the applicability of 40 CFR Part 63, Subpart YY (Generic MACT). The facility operates a dry spinning spandex production process (the Lycra Process). Although the Lycra process is in the spandex source category, the spinning operations are exempt from the requirements as stated in 40 CFR §63.1103 (h)(1)(ii)(C).

DEQ reviewed the applicability of 40 CFR Part 63, Subpart FFFF (MON). The Lycra process is part of the affected source in Subpart YY and, therefore is exempt from the provisions of the MON. The Nylon process contains HAPs only as impurities. Fabricating operations such as spinning a polymer into its end use are exempt from the MON in accordance with 63.245(c)(4). The Dowtherm system, which contains biphenyl, is an ancillary part of the Nylon spinning process and, therefore, is not considered part of a miscellaneous chemical processing unit provision. Therefore, this subpart does not apply.

DEQ reviewed the applicability of 40 CFR Part 63, Subpart Q (Industrial Cooling Towers). INVISTA operates cooling towers at the facility. However, none of the cooling towers are operated with chromium-based water treatment chemicals. Therefore, this subpart does not apply.

DEQ reviewed the applicability of 40 CFR Part 63, ZZZZ (Reciprocating Internal Combustion Engine). INVISTA operates a diesel-fired engine to power a water pump near the powerhouse. The rating of the engine is 25 bhp, well below the 500 bhp threshold. Therefore, this subpart does not apply.

DEQ reviewed the applicability of 40 CFR Part 63, EEEE (Organic Liquid Distribution). INVISTA stores liquids that contain greater than five percent by weight organic HAP listed in Table 1 of Subpart EEEE. However, none of these liquids is classified as an organic liquid under Subpart EEEE, since the annual average true vapor pressures of these liquids are less than 0.1 psia. Therefore, this subpart does not apply.

The Best Available Retrofit Technology (BART) requirements of the Regional Haze Rule apply to facilities in 26 source categories constructed between 1962 and 1977 with the potential to emit greater than or equal to 250 tons per year of any visibility impairing pollutant. The INVISTA facility in Waynesboro produces textile fibers. The production of textile fibers classifies the facility as a “chemical process plant” under the BART regulations of 40 CFR Part 51. The boilers and vaporizers were constructed between 1962 and 1977. As per EPA’s recent

determination, fossil-fuel boiler having less than or equal to 250 MMBTU/hr heat input that serves a process only by contributing energy (e.g., steam or heat) is not considered to be BART-eligible. Accordingly, none of the emissions units at the facility are subject to BART requirements of the Regional Haze Rule. EPA's determination is included in Attachment E.

COMPLIANCE PLAN

INVISTA is currently in compliance with all applicable requirements. No compliance plan was included in the application or in the permit.

INSIGNIFICANT EMISSION UNITS

The insignificant emission units are presumed to be in compliance with all requirements of the Clean Air Act as may apply. Based on this presumption, no monitoring, recordkeeping or reporting shall be required for these emission units in accordance with 9 VAC 5-80-110.

Insignificant emission units include the following:

Emission Unit No.	Emission Unit Description	Citation	Pollutant(s) Emitted (9 VAC 5-80-720 B)	Rated Capacity (9 VAC 5-80-720 C)
CP FLAKER Process 1	Cupric Bromide Dilution Mix Tank (1996)	9 VAC 5-80-720 B	PM, PM-10	< 1,000 gallon
CP FLAKER Process 2	Cupric Bromide Storage Tank (1996)	9 VAC 5-80-720 B	PM, PM-10	2,000 lb
CP FLAKER Process 3	Pelletizer (1996)	9 VAC 5-80-720 B	PM, PM-10	
CP FLAKER Process 4	Cutter (1996)	9 VAC 5-80-720 B	PM, PM-10	
CP FLAKER Process 5	Dryer/Classifier (1996)	9 VAC 5-80-720 B	PM, PM-10	
CP FLAKER Process 6	Dense Phase Pneumatic Conveying System (1996)	9 VAC 5-80-720 B	PM, PM-10	
CP FLAKER Process 7	Nylon Flake Storage Bins (1996)	9 VAC 5-80-720 B	PM, PM-10	
534A	#6 Fuel Oil	9 VAC 5-80-720 B	VOC, HAPs	250,000 gallon
534B	#6 Fuel Oil	9 VAC 5-80-720 B	VOC, HAPs	250,000 gallon
534C	Diesel Fuel	9 VAC 5-80-720 B	VOC, HAPs	500 gallon
604A	#2 Fuel Oil	9 VAC 5-80-720 B	VOC, HAPs	75,000 gallon
617A	Diesel Fuel	9 VAC 5-80-720 B	VOC, HAPs	550 gallon
617B	Diesel Fuel	9 VAC 5-80-720 B	VOC, HAPs	550 gallon
607	#6 Fuel Oil	9 VAC 5-80-720 B	VOC, HAPs	25,000 gallon
801	#6 Fuel Oil	9 VAC 5-80-720 B	VOC, HAPs	1,500,000 gallon
618	Gasoline Storage Tank	9 VAC 5-80-720 B	VOC	6,000 gallon

Emission Unit No.	Emission Unit Description	Citation	Pollutant(s) Emitted (9 VAC 5-80-720 B)	Rated Capacity (9 VAC 5-80-720 C)
N/A	Nylon Salt & CP Tanks	9 VAC 5-80-720 B	VOC	
35	Nylon Finish Prep. Additives	9 VAC 5-80-720 B	VOC	
N/A	Remaining Finish Prep. Additives Tanks	9 VAC 5-80-720 B	VOC	
53	Nylon Finish Prep.	9 VAC 5-80-720 B	VOC	
N/A	Remaining Finish Prep. Tanks	9 VAC 5-80-720 B	VOC	
N/A	Nylon Finish Prep. R/O Tanks	9 VAC 5-80-720 B	VOC	
N/A	Nylon TiO2 Tanks	9 VAC 5-80-720 B	PM, PM-10	
43377-0300-08	Hamper Dryer Condensate Collection Tank	9 VAC 5-80-720 B	VOC	
5	'A' Vacuum Tank	9 VAC 5-80-720 B		
6	'B' Vacuum Tank	9 VAC 5-80-720 B		
7	'C' Vacuum Tank	9 VAC 5-80-720 B		
FA 4377-31-11	'D' Vacuum Tank	9 VAC 5-80-720 B		
9	0.8" Extractor Extruder Condensate Tank	9 VAC 5-80-720 B		
14	Filtrate Storage Tank (Back-up)	9 VAC 5-80-720 B	VOC	
SN 36885	Condensate Collection Tank	9 VAC 5-80-720 B	VOC	
15	DMAC Over Flow Tank	9 VAC 5-80-720 B	VOC	
16	DMAC Over Flow Tank	9 VAC 5-80-720 B	VOC	
FS 471563	Premix Supply Tank	9 VAC 5-80-720 B	VOC	
48-196-2	Glycol Storage Tank	9 VAC 5-80-720 B	VOC	
T-76-35-4	DMAC Storage Tank #4	9 VAC 5-80-720 B	VOC	
20	Dry DMAC Storage Tank	9 VAC 5-80-720 B	VOC	
7-564	128 Recycle Exhaust	9 VAC 5-80-720 B	VOC	
7-604	4 th Recycle Exhaust	9 VAC 5-80-720 B	VOC	
7-615	Spinning Lag Fan	9 VAC 5-80-720 B	VOC	
7-633	Penthouse Stack	9 VAC 5-80-720 B	VOC	
7-634	Penthouse Vent	9 VAC 5-80-720 B	VOC	
7-649	Shoulder Shaper	9 VAC 5-80-720 B	VOC	
L1	North Storage Tank	9 VAC 5-80-720 B	VOC	
L2	Supply Tank	9 VAC 5-80-720 B	VOC	
L3	Storage Tank	9 VAC 5-80-720 B	VOC	
L4	Storage Tank	9 VAC 5-80-720 B	VOC	

Emission Unit No.	Emission Unit Description	Citation	Pollutant(s) Emitted (9 VAC 5-80-720 B)	Rated Capacity (9 VAC 5-80-720 C)
L5	Supply Tank	9 VAC 5-80-720 B	VOC	
L6	Supply Tank	9 VAC 5-80-720 B	VOC	
L7	Supply Tank	9 VAC 5-80-720 B	VOC	
L8	North Side	9 VAC 5-80-720 B	VOC	
L9	Supply Tank	9 VAC 5-80-720 B	VOC	
96	Perclene Drum	9 VAC 5-80-720 B	HAP, VOC	
97	Caustic Feed Tank	9 VAC 5-80-720 B	VOC	
98	Caustic Feed Tank	9 VAC 5-80-720 B	VOC	
99	Column Product Surge Tank	9 VAC 5-80-720 B	VOC	
100	Column Product Surge Tank	9 VAC 5-80-720 B	VOC	
101	Column Vent Pot	9 VAC 5-80-720 B	VOC	
102	Column Vent Pot	9 VAC 5-80-720 B	VOC	
103	Column Vent Pot	9 VAC 5-80-720 B	VOC	
104	Reflux Surge Tank	9 VAC 5-80-720 B	VOC	
105	Column Vent Pot	9 VAC 5-80-720 B	VOC	
106	Segregation Tank	9 VAC 5-80-720 B	VOC	
107	WFE HB Product Surge Tank	9 VAC 5-80-720 B	VOC	
108	Analyzer Carrier Waste Tank	9 VAC 5-80-720 B	VOC	
109	Waste Tank	9 VAC 5-80-720 B	VOC	
110	Aqueous Waste Tank	9 VAC 5-80-720 B	VOC	
111	Reflux Surge Tank	9 VAC 5-80-720 B	VOC	
112	Product Surge Tank	9 VAC 5-80-720 B	VOC	
113	Feed Tank	9 VAC 5-80-720 B	VOC	
114	Column Feed Tank	9 VAC 5-80-720 B	VOC	
115	Utility Tank	9 VAC 5-80-720 B	VOC	
116	Dehydration Feed Tank	9 VAC 5-80-720 B	VOC	
117	Dehydration Feed	9 VAC 5-80-720 B	VOC	
118	Tank	9 VAC 5-80-720 B	VOC	
119	Tank	9 VAC 5-80-720 B	VOC	
120	Supply Tank	9 VAC 5-80-720 B	VOC	
121	Supply Tank	9 VAC 5-80-720 B	VOC	
122	Feed Tank	9 VAC 5-80-720 B	VOC	
123	Surge Tank	9 VAC 5-80-720 B	VOC	
124	Tank	9 VAC 5-80-720 B	VOC	
125	Tank	9 VAC 5-80-720 B	VOC	
126	Tank	9 VAC 5-80-720 B	VOC	
127	Solution Feed Tank	9 VAC 5-80-720 B	VOC	
128	Feed Tank	9 VAC 5-80-720 B	VOC	
129	Feed Tank	9 VAC 5-80-720 B	VOC	
604B	Diesel Fuel Storage Tank	9 VAC 5-80-720 B	VOC	6,000 gallon

Emission Unit No.	Emission Unit Description	Citation	Pollutant(s) Emitted (9 VAC 5-80-720 B)	Rated Capacity (9 VAC 5-80-720 C)
ASH	Ash Handling	9 VAC 5-80-720 B	PM, PM-10, PM-2.5	
CTS	Process Cooling Towers	9 VAC 5-80-720 B	PM, PM-10, PM-2.5	
LABS	On Site Laboratories	9 VAC 5-80-720 B	VOC, HAPs	
	Remaining Recovery Tank	9 VAC 5-80-720 B	VOC	
	Wastewater Treatment	9 VAC 5-80-720 B	VOC	
	Interior, Exterior Maintenance	9 VAC 5-80-720 B	VOC	
	Comfort Heating & Cooling	9 VAC 5-80-720 B	VOC	
	Tank/Equipment Clean-Out	9 VAC 5-80-720 B	VOC	
	Spill Collection Tanks	9 VAC 5-80-720 B	VOC	
	Water-Based Parts Washer	9 VAC 5-80-720 B	VOC	
	Welding Activities	9 VAC 5-80-720 B	VOC	
	Parts Washers	9 VAC 5-80-720 B	VOC	

The citation criteria for insignificant activities are as follows:

9 VAC 5-80-720 A - Listed Insignificant Activity, Not Included in Permit Application

9 VAC 5-80-720 B - Insignificant due to emission levels

9 VAC 5-80-720 C - Insignificant due to size or production rate

CONFIDENTIAL INFORMATION

INVISTA S.à r.l. submitted a request for confidentiality. Not all portions of the Title V application are suitable for public review. Therefore, the permittee has submitted a confidential copy and a public copy.

PUBLIC PARTICIPATION

A public notice regarding the draft permit was placed in the Waynesboro News-Virginian, on July 28, 2006. EPA was sent a copy of the draft permit and notified of the public notice on July 28, 2006. West Virginia, the only affected state, was sent a copy of the public notice in a letter dated July 28, 2006. All persons on the Title V mailing list were also sent a copy of the public notice in letters dated July 31, 2006.

Public comments were accepted from August 1, 2006, to August 30, 2006. No comments were received from the public, the affected state or the EPA regarding the draft permit.

ATTACHMENT A

2005 Emission Inventory

PUBLIC FILE COPY




VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

EMISSION STATEMENT CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or person who manage the system, or those persons directly responsible for gathering and evaluation the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

(see reverse side for instructions)

SIGNATURE: 

DATE: 13 April 2006

PRINTED NAME: Michael W. Laczynski

TITLE: Site Manager

COMPANY: INVISTA S.à r.l.

REGISTRATION NUMBER: 80517

TELEPHONE NUMBER: (540) 949-2000

PUBLIC FILE COPY



2005 EMISSION STATEMENT

Please correct any errors in the information below (cross out & replace)

FACILITY NAME INVISTA S.à r.l. Waynesboro Facility	REGISTRATION # 80517	CONTACT PERSON Ronald B. Shifflett Brian D. Campbell	
LOCATION 400 DuPont Blvd. Waynesboro, VA 22980		JURISDICTION Waynesboro City	
MAILING ADDRESS 400 DuPont Blvd.	MAILING CITY AND STATE Waynesboro, VA	ZIPCODE 22980	
PARENT COMPANY (IF APPLICABLE) INVISTA S.à r.l.	TELEPHONE NUMBER (540) 949-2844 (540) 949-2424	PRIMARY NAICS CODE 325222	<i>For Agency Use Only</i>
			FESOP

FACILITY TOTALS (Sum emissions from attached pages)

	ANNUAL	OZONE SEASON
TOTAL VOC EMISSIONS FOR 2005	133.17 TONS/YR	730 LBS/DAY
TOTAL NO _x EMISSIONS FOR 2005	612.42 TONS/YR	3,356 LBS/DAY
TOTAL SO ₂ EMISSIONS FOR 2005	1,364.16 TONS/YR	NA
TOTAL PM ₁₀ EMISSIONS FOR 2005	92.84 TONS/YR	NA
TOTAL PB EMISSIONS FOR 2005	0.02 TONS/YR	NA
TOTAL TRS EMISSIONS FOR 2005	NA TONS/YR	NA
TOTAL TNMOC EMISSIONS FOR 2005 (landfills only)	NA TONS/YR	NA
TOTAL non-VOC/non-PM HAP EMISSIONS FOR 2005	77.4 (HCl), 2.88 (HF) TONS/YR	NA
TOTAL CO EMISSIONS FOR 2005	29.21 TONS/YR	NA
TOTAL PM _{2.5} EMISSIONS FOR 2005	70.99 TONS/YR	NA
TOTAL NH ₃ EMISSIONS FOR 2005	1.28 TONS/YR	NA

PLEASE ATTACH "ANNUAL UPDATE" FORM.

PLEASE ATTACH "EMISSION STATEMENT CERTIFICATION" with appropriate signature.

2005 Actual Criteria Pollutant Emissions Summary

Emission Source	2005 Pollutant Emissions (tpy)									
	VOC	NO _x	SO ₂	PM ₁	PM ₁₀	PM _{2.5}	Pb	CO	NH ₃	
Boiler 1 ✓	1.19	215.13	531.43	29.57	28.97	25.44	8.20E-03	10.31	0.10	
Boiler 2	0.58	205.53	253.82	14.08	13.81	12.16	3.94E-03	5.00	0.04	
Boiler 3	0.75	132.02	350.32	20.63	19.83	16.80	5.02E-03	7.11	0.23	
Vaporizer 1	0.20	29.77	113.28	9.17	8.04	5.54	7.94E-04	3.46	0.45	
Vaporizer 2	0.18	29.91	115.30	9.31	8.16	5.61	8.07E-04	3.20	0.45	
Vaporizer 3	0.01	0.07	0.00	0.01	0.01	0.01	7.31E-07	0.12	0.00	
Lyera Production Area	92.47	--	--	--	--	--	--	--	--	
Solvent Recovery	2.10	--	--	--	--	--	--	--	--	
Lyera Fugitive	20.86	--	--	--	--	--	--	--	--	
Nylon Production Area	0.67	--	--	21.48	12.74	4.50	--	--	--	
Dowtherm Losses	14.16	--	--	--	--	--	--	--	--	
Coal Handling	--	--	--	3.12	1.28	0.94	--	--	--	
Facility Total	133.17	612.42	1,364.16	107.38	92.84	70.99	0.02	29.21	1.28	

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Trinity Consultants
063402.0021

INVISTA Waynesboro Facility

2005 Actual
Emission Calculations

INVISTA S.à r.l.
Waynesboro Facility
Waynesboro, VA

prepared by

Trinity Consultants, Inc.
5821 Fairview Road
Suite 400
Charlotte, NC 28209
(704) 553 - 7747

April 2006

Combustion Emission Factors - Summary

No. 6 Fuel Oil Emission Factors

Pollutant	Emission Factor	Units	Source	Converted Factor	Units
Antimony	5.25E-03	lb/10 ³ gal	AP-42 ¹		
Arsenic	1.32E-03	lb/10 ³ gal	AP-42 ¹		
Benzene	2.14E-04	lb/10 ³ gal	AP-42 ²		
Beryllium	2.78E-05	lb/10 ³ gal	AP-42 ¹		
Cadmium	3.98E-04	lb/10 ³ gal	AP-42 ¹		
Chromium	8.45E-04	lb/10 ³ gal	AP-42 ¹		
Chromium (VI)	2.48E-04	lb/10 ³ gal	AP-42 ¹		
Cobalt	6.02E-03	lb/10 ³ gal	AP-42 ¹		
Ethyl benzene	6.36E-05	lb/10 ³ gal	AP-42 ²		
Formaldehyde	3.30E-02	lb/10 ³ gal	AP-42 ²		
Hydrochloric Acid	7.10E-05	lb/MMBtu	MACT ⁴	1.06E-02	lb/10 ³ gal
Hydrogen Fluoride	3.73E-02	lb/10 ³ gal	MACT ⁴		
Lead	1.51E-03	lb/10 ³ gal	AP-42 ¹		
Manganese	3.00E-03	lb/10 ³ gal	AP-42 ¹		
Mercury	7.40E-05	lb/10 ³ gal	SARA 313 ⁸		
Naphthalene	1.13E-03	lb/10 ³ gal	AP-42 ²		
Nickel	8.45E-02	lb/10 ³ gal	AP-42 ¹		
Phosphorous	9.46E-03	lb/10 ³ gal	AP-42 ¹		
POM ³	8.08E-05	lb/10 ³ gal	AP-42 ⁷		
Selenium	6.83E-04	lb/10 ³ gal	AP-42 ¹		
Sulfuric Acid	3.38E-03	lb/gal	SARA 313 ⁶	3.38E+00	lb/10 ³ gal
Total Dioxins	3.18E-09	g/L	SARA 313 ⁵	2.65E-08	lb/10 ³ gal
Toluene	6.20E-03	lb/10 ³ gal	AP-42 ²		
1,1,1-Trichloroethane	2.36E-04	lb/10 ³ gal	AP-42 ²		
Xylenes	1.09E-04	lb/10 ³ gal	AP-42 ²		

1. Table 3-11: Emission Factors for Metals From Uncontrolled No. 6 Fuel Oil Combustion, residual oil (September 1998).

2. Table 3-9: Emission Factors for Speciated Organic Compounds From Fuel Oil Combustion, utilities firing No. 6 oil (September 1998).

3. Polycyclic Organic Matter includes Acenaphthene, Acenaphthylene, Anthracene, Benz(a)anthracene, Benzo(a,k)fluoranthene, Benzo(a,h,i)perylene, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Fluorene, Indol(1,2,3-cd)pyrene, Phenanthrene, and Pyrene.

4. EPA Industrial Boiler MACT rulemaking emission factor for uncontrolled residual and distillate oil firing in Docket Document Number II-B-8, Development of Average Emission Factors and Baseline Emission Estimates for the Industrial, Commercial and Institutional Boilers and Process Heaters NESHAP (October 2002).

5. Table 4-9: Average Emission Factors (ppb/L oil combusted) for Estimating Air Releases of Dioxin and Dioxin-like Compounds from Oil-Fired Utility Boilers. EPCRA - Section 313 Guidance for Reporting Toxic Chemicals within the Dioxin and Dioxin-like Compounds Category (December 2000) EPA-745-B-00-021.

6. Section 3.1.7: Fuel Oil Combustion. EPCRA - Section 313. Guidance for Reporting Sulfuric Acid (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size) (Updated March 3, 1998) EPA-745-R-97-007.

7. Table 3-9: Emission Factors for Speciated Organic Compounds From Fuel Oil Combustion, utilities firing No. 6 oil (September 1998) for POM and Benzo(a,h,i)perylene, and Locating & Est. Emis. of Polycyclic Organic Matter (EPA, 1998) for PAC.

8. Table 3-8: Concentrations of EPCRA Section 313 Metals and Their Compounds in No. 6 Fuel Oil and Pounds of Metal Oxide Manufactured per Gallon of Fuel Oil Combusted. EPCRA - Section 313. Electricity Generating Facilities (February, 2000) EPA 745-B-00-004.

Combustion Emission Factors - Summary Coal Emission Factors

Pollutant	Emission Factor	Units	Source	Converted Factor	Units
Acetaldehyde	5.70E-04	lb/ton	AP-42 ²		
Acetophenone	1.50E-05	lb/ton	AP-42 ²		
Acrolein	2.90E-04	lb/ton	AP-42 ²		
Antimony	1.80E-05	lb/ton	AP-42 ⁴		
Arsenic	4.10E-04	lb/ton	AP-42 ⁴		
Benzene	1.30E-03	lb/ton	AP-42 ²		
Benzyl Chloride	7.00E-04	lb/ton	AP-42 ²		
Beryllium	2.10E-05	lb/ton	AP-42 ⁴		
Biphenyl	1.70E-06	lb/ton	AP-42 ¹		
Bis (2-ethylhexyl) phthalate	7.30E-05	lb/ton	AP-42 ²		
Bromoform	3.90E-05	lb/ton	AP-42 ²		
Cadmium	5.10E-05	lb/ton	AP-42 ⁴		
Carbon Disulfide	1.30E-04	lb/ton	AP-42 ²		
2-Chloroacetophenone	7.00E-06	lb/ton	AP-42 ²		
Chlorobenzene	2.20E-05	lb/ton	AP-42 ²		
Chloroform	5.90E-05	lb/ton	AP-42 ²		
Chromium	2.60E-04	lb/ton	AP-42 ⁴		
Chromium (VI)	7.90E-05	lb/ton	AP-42 ⁴		
Cobalt	1.00E-04	lb/ton	AP-42 ⁴		
Cumene	5.30E-06	lb/ton	AP-42 ²		
Cyanide	2.50E-03	lb/ton	AP-42 ²		
2,4-Dinitrotoluene	2.80E-07	lb/ton	AP-42 ²		
Dimethyl sulfate	4.80E-05	lb/ton	AP-42 ²		
Ethyl benzene	9.40E-05	lb/ton	AP-42 ²		
Ethyl chloride	4.20E-05	lb/ton	AP-42 ²		
Ethylene dibromide	1.20E-06	lb/ton	AP-42 ²		
Ethylene dichloride	4.00E-05	lb/ton	AP-42 ²		
Formaldehyde	2.40E-04	lb/ton	AP-42 ²		
Hexane	6.70E-05	lb/ton	AP-42 ²		
Hydrochloric Acid ^{8,9}	1.56E-01	%	Boiler MACT ³	1.97	lb/ton
Hydrogen Fluoride ^{8,9}	5.60E+01	ppm	Boiler MACT ³	7.17E-02	lb/ton
Isophorone	5.80E-04	lb/ton	AP-42 ²		
Lead	4.20E-04	lb/ton	SARA 313 ¹⁰		
Manganese	4.90E-04	lb/ton	AP-42 ⁴		
Mercury ¹¹	4.50E-02	ppm	Coal Sample ⁸	1.52E-05	lb/ton
Methyl bromide	1.60E-04	lb/ton	AP-42 ²		
Methyl chloride	5.30E-04	lb/ton	AP-42 ²		
Methyl ethyl ketone	3.90E-04	lb/ton	AP-42 ²		
Methyl hydrazine	1.70E-04	lb/ton	AP-42 ²		
Methyl methacrylate	2.00E-05	lb/ton	AP-42 ²		
Methyl tert butyl ether	3.50E-05	lb/ton	AP-42 ²		
Methylene chloride	2.90E-04	lb/ton	AP-42 ²		
Naphthalene	1.30E-05	lb/ton	AP-42 ¹		
Nickel	2.80E-04	lb/ton	AP-42 ⁴		
Phenol	1.60E-05	lb/ton	AP-42 ²		
POM	2.08E+00	lb/10 ¹² Btu	AP-42 ⁵	6.09E-05	lb/ton
Propionaldehyde	3.80E-04	lb/ton	AP-42 ²		
Selenium	1.30E-03	lb/ton	AP-42 ⁴		
Styrene	2.50E-05	lb/ton	AP-42 ²		
Sulfuric Acid	3.01E-01	lb/ton	SARA 313 ⁷		
Total Dioxins	1.71E-09	g/kg	SARA 313 ⁶	3.42E-09	lb/ton
Tetrachloroethylene	4.30E-05	lb/ton	AP-42 ²		
Toluene	2.40E-04	lb/ton	AP-42 ²		
1,1,1-Trichloroethane	2.00E-05	lb/ton	AP-42 ²		
Vinyl acetate	7.60E-06	lb/ton	AP-42 ²		
Xylenes	3.70E-05	lb/ton	AP-42 ²		

1. Table 1.1-13 AP-42, FF (September 1998).

2. Table 1.1-14 AP-42, FF (September 1998).

3. Factors from coal analysis - Equations are consistent with EPA Boiler MACT reference materials.

4. Table 1.1-18 AP-42, FF (September 1998).

5. Table 1.1-17 AP-42, FF (September 1998).

6. Table 4.8 EPCRA - Section 313: Guidance for Reporting Toxic Chemicals within the Dioxin Compounds Category (December 2000) EPA-745-B-00-021.

7. Section 3.1.6 Coal Combustion - EPCRA - Section 313: Guidance for Reporting Sulfuric Acid (acid aerosols including mists, vapors, gas, fog, and other airborne forms) of any particle size(s). Updated March 3, 1998 EPA-745-R-97-007.

8. Average of 2005 coal sample data.

9. "Study of Hazardous Air Pollutant Emissions from Electric Utility Steam Generating Units -- Final Report to Congress." Volume 1 (EPA-453/R-96-004a) and Volume 2 Appendices (EPA-453/R-96-004a) - February 1996. page 3-4 lists that 63% of the amount of chlorine in coal is emitted from the stack as HCl; 64% of the amount of fluorine in coal is emitted from the stack as HF.

10. Table C-1 Lead Emission Factors Computed From Version 6.23 of the Factor Information Retrieval (FIRE) Data System - EPCRA - Section 313: Guidance for Reporting Releases and Other Waste Management Quantities of Toxic Chemicals - Lead and Lead Compounds (December 2001) EPA-260-B-01-027.

11. Table 4-2 Percent Mercury Present in Coal Which is Released to Air - EPCRA - Section 313: Guidance for Reporting Toxic Chemicals - Mercury and Mercury Compounds (December 2001) EPA-260-B-01-004. PC Boiler, FF = 16.90%.

Combustion Emission Factors - Summary

Natural Gas Emission Factors

Pollutant	Emission Factor	Units	Source	Converted Factor	Units
Arsenic	2.00E-04	lb/10 ⁶ scf	AP-42 ³		
Benzene	2.10E-03	lb/10 ⁶ scf	AP-42 ²		
Beryllium	1.20E-05	lb/10 ⁶ scf	AP-42 ³		
Cadmium	1.10E-03	lb/10 ⁶ scf	AP-42 ³		
Chromium	1.40E-03	lb/10 ⁶ scf	AP-42 ³		
Cobalt	8.40E-05	lb/10 ⁶ scf	AP-42 ³		
Formaldehyde	1.55E-01	lb/10 ⁶ scf	SARA 313 ⁵		
Hexane	1.80E-00	lb/10 ⁶ scf	AP-42 ²		
Lead	5.00E-04	lb/10 ⁶ scf	AP-42 ¹		
Manganese	3.80E-04	lb/10 ⁶ scf	AP-42 ³		
Mercury	2.60E-04	lb/10 ⁶ scf	AP-42 ³		
Naphthalene	6.10E-04	lb/10 ⁶ scf	AP-42 ³		
Nickel	2.10E-03	lb/10 ⁶ scf	AP-42 ³		
POM ⁴	8.76E-05	lb/10 ⁶ scf	AP-42 ⁶		
Selenium	2.40E-05	lb/10 ⁶ scf	AP-42 ³		
Toluene	3.40E-03	lb/10 ⁶ scf	AP-42 ²		

- Table 1.4-2 Emission Factors for Criteria Pollutants and Greenhouse Gases from Natural Gas Combustion (July 1998)
- Table 1.4-3 Emission Factors for Speciated Organic Compounds from Natural Gas Combustion (July 1998).
- Table 1.4-4 Emission Factors for Metals from Natural Gas Combustion (July 1998).
- Polycyclic Organic Matter includes Acenaphthene, Acenaphthylene, Anthracene, Benz(a)anthracene, Benzo(a)pyrene, Benzo(b,k)fluoranthene, Benzo(g,h,i)perylene, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Fluorene, Indol(1,2,3-cd)pyrene, Phenanthrene, and Pyrene.
- Table 3-11 Emission Factors and Triggering Thresholds for Formaldehyde Manufactured During Combustion (EPCRA - Section 313 Electricity Generating Facilities (February 2000) EPA-745-B-00-004.
- Table 1.4-3 Emission Factors for Speciated Organic Compounds from Natural Gas Combustion (July 1998) for POM and PAC, and PAC Final Guidance (EPA, 2001) for Benzo(g,h,i)perylene

No. 2 Fuel Oil Emission Factors

Pollutant	Emission Factor	Units	Source	Converted Factor	Units
Arsenic	4	lb/10 ¹² Btu	AP-42 ¹		
Beryllium	3	lb/10 ¹² Btu	AP-42 ²		
Cadmium	3	lb/10 ¹² Btu	AP-42 ²		
Chromium	3	lb/10 ¹² Btu	AP-42 ²		
Formaldehyde	0.061	lb/10 ³ gal	AP-42 ¹	445	lb/10 ¹² Btu
Hydrochloric Acid	7.10E-05	lb/MMBtu	MACT ⁴	71	lb/10 ¹² Btu
Hydrogen Fluoride	2.00E-02	lb/10 ³ gal	MACT ⁴	146	lb/10 ¹² Btu
Lead	9	lb/10 ¹² Btu	AP-42 ²		
Manganese	6	lb/10 ¹² Btu	AP-42 ²		
Mercury	2.80E-03	lb/10 ³ gal	SARA 313 ⁷	20	lb/10 ¹² Btu
Nickel	3	lb/10 ¹² Btu	AP-42 ²		
POM ³	0.0033	lb/10 ³ gal	AP-42 ¹	24	lb/10 ¹² Btu
Selenium	15	lb/10 ¹² Btu	AP-42 ²		
Sulfuric Acid	4.41E-04	lb/gal	SARA 313 ⁶	3,214	lb/10 ¹² Btu
Total Dioxins	3.18E-09	g/L	SARA 313 ⁵	1.93E-04	lb/10 ¹² Btu

- Table 1.3-8 Emission Factors for Nitrogen Oxide (NO_x), Polycyclic Organic Matter (POM), and Formaldehyde (HCHO), from Fuel Oil Combustion (Utility Boilers, Distillate oil fired) (September 1998)
- Table 1.3-10 Emission Factors for Trace Elements from Distillate Fuel Oil Combustion Sources, Distillate oil fired (September 1998).
- Polycyclic Organic Matter includes Acenaphthene, Acenaphthylene, Anthracene, Benz(a)anthracene, Benzo(b,k)fluoranthene, Benzo(g,h,i)perylene, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Fluorene, Indol(1,2,3-cd)pyrene, Phenanthrene, and Pyrene.
- EPA Industrial Boiler MACT rulemaking emission factor for uncontrolled residual and distillate oil firing in Docket Document Number II-B-8, Development of Average Emission Factors and Baseline Emission Estimates for the Industrial, Commercial, and Institutional Boilers and Process Heaters NESHAP (October 2002).
- Table 4-9 Average Emission Factors (pg/L oil combusted) for Estimating Air Releases of Dioxin and Dioxin-like Compounds from Oil-Fired Utility Boilers (EPA - Section 312 Guidance for Reporting Toxic Chemicals within the Dioxin and Dioxin-like Compounds Category (December 2000), EPA-745-B-00-002.
- Section 312.7 Fuel Oil Combustion, EPCRA - Section 313 Guidance for Reporting Sulfuric Acid (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size) (Updated March 3, 1998) EPA-745-R-97-007.
- Table 3-9 Concentrations of EPCRA Section 313 Metals and Their Compounds in No. 2 Fuel Oil and Forms of Metal Oxide Manufactured per Gallon of Fuel Oil Combusted, EPCRA - Section 313 Electricity Generating Facilities (February 2000) EPA-745-B-00-004.

Boilers #1, #2, & #3 - Criteria Emissions

Registration #80517 Stack #1 Point #1-4 Segment #1-4 SCC # 10200202, 10200401, 10200501, 10200601

2005 Fuel Usage

Emission Unit	Heat Input (MMBtu/hr)	2005 Fuel Usage		
		Coal (tpy)	#6 Fuel Oil (gpy)	Natural Gas (Mscf/yr)
Boiler #1	196	38,309	202,355	0
Boiler #2	206	18,462	76,277	1,055
Boiler #3	206	21,963	537,069	2,167

Fuel Information

Heating Value of No. 6 Fuel Oil	149,942	Btu/gal
Heating Value of No. 2 Fuel Oil	137,228	Btu/gal
Heating Value of Coal	14,636	Btu/lb
Heating Value of Natural Gas	1,020	Btu/scf
Sulfur Content of No. 6 Fuel Oil	1.38	%
Sulfur Content of No. 2 Fuel Oil	0.18	%
Sulfur Content of Coal	0.7	%
Ash Content of Coal	10.1	%

Pollutant Name	Emission Factors				2005 Actual Emissions (tpy)		
	Coal (lb/ton) ⁴	#6 Fuel Oil (lb/10 ³ gal) ⁵	#2 Fuel Oil (lb/10 ³ gal) ⁵	Natural Gas (lb/10 ⁶ scf) ⁶	Boiler #1	Boiler #2	Boiler #3
NO _x ²	22	47	24	280	215.13	205.53	132.02
NO _x ²	11	40	24	140	10.31	5.00	7.11
CO	0.5	5	5	84	531.43	253.82	350.32
SO ₂	26.6	216.66	28.26	0.6	1.19	0.58	0.75
VOC	0.06	0.28	0.2	5.5	29.57	14.08	20.63
PM ⁷	1.45	17.4	3.3	7.6	28.97	13.81	19.83
PM ₁₀ ⁷	1.43	15.2	2.3	7.6	25.44	12.16	16.80
PM _{2.5} ⁷	1.27	10.4	1.55	3.2	0.10	0.04	0.23
Ammonia ¹	0.000565	0.8	0.8	3.2			

1. The potential emissions were calculated on a pollutant by pollutant basis, assuming worst case fuel for each pollutant.

2. Boilers #1 and #3 are equipped with Low NO_x Burners

3. Emission factor from FIRE database (version 6.23)

4. Emission factors from AP-42 1.1 Bituminous and Subbituminous Coal Combustion (September 1998): CO, NO_x, and SO₂ (Table 1.1-3); VOC (Table 1.1-19); filterable PM_{2.5} (Table 1.1-6) and Condensable PM (Table 1.1-5). Emission factors for filterable PM and PM₁₀ are from stack testing at Waynesboro facility.

5. Emission factors from AP-42 1.3 Fuel Oil Combustion (September 1998): CO, NO_x, SO₂, filterable PM (Table 1.3-1); condensable PM (Table 1.3-2); VOC (Table 1.3-3); No. 2 Fuel Oil PM_{2.5} (Table 1.3-6)

6. Emission factors from AP-42 1.4 Natural Gas Combustion (July 1998): CO and NO_x (Table 1.4-1); SO₂, VOC, and PM (Table 1.4-2).

7. PM Emission factors include filterable and condensable PM.

Vaporizers #1, #2, & #3 - Criteria Emissions

Registration #80517 Stack #1 Point #5, 6, 41 Segment #1-3 SCC # 10200402, 10200502, 10200602

2005 Fuel Usage

Emission Unit	Heat Input (MMBtu/hr)	2005 Fuel Usage		
		#6 Fuel Oil (gpy)	#2 Fuel Oil (gpy)	Natural Gas (Mscf/yr)
Vaporizer #1	43	1,045,614	0	20,214.18
Vaporizer #2	43	1,064,346	0	12,718.61
Vaporizer #3	22	0	0	2,925.66

Fuel Information

Heating Value of No. 6 Fuel Oil	149,942	Btu/gal
Heating Value of No. 2 Fuel Oil	137,228	Btu/gal
Heating Value of Natural Gas	1,020	Btu/scf
Sulfur Content of No. 6 Fuel Oil	1.38	%
Sulfur Content of No. 2 Fuel Oil	0.18	%

Pollutant Name	Emission Factors			2005 Actual Emissions (tpy)		
	#6 Fuel Oil (lb/10 ³ gal) ⁴	#2 Fuel Oil (lb/10 ³ gal) ⁴	Natural Gas (lb/10 ⁶ scf) ⁵	Vaporizer #1	Vaporizer #2	Vaporizer #3
NO _x ²	55	20	100	29.77	29.91	0.07
NO _x ²	55	20	50			0.12
CO	5	5	84	3.46	3.20	0.00
SO ₂	216.66	25.56	0.6	113.28	115.30	0.01
VOC	0.28	0.2	5.5	0.20	0.18	0.01
PM ⁶	17.4	3.3	7.6	9.17	9.31	0.01
PM ₁₀ ⁶	15.2	2.3	7.6	8.04	8.16	0.01
PM _{2.5} ⁶	10.4	1.55	7.6	5.54	5.61	0.01
Ammonia ³	0.8	0.8	3.2	0.45	0.45	0.00

2. Vaporizer #3 is equipped with Low NO_x Burners

3. Emission factor from FIRE database (version 6.23)

4. Emission factors from AP-42 1.3 Fuel Oil Combustion (September 1998): CO, NO_x, SO₂, filterable PM (Table 1.3-1); condensable PM (Table 1.3-2); VOC (Table 1.3-3); No. 2 Fuel Oil PM_{2.5} (Table 1.3-6)

5. Emission factors from AP-42 1.4 Natural Gas Combustion (July 1998): CO and NO_x (Table 1.4-1); SO₂, VOC, and PM (Table 1.4-2).

6. PM Emission factors include filterable and condensable PM.

Boilers #1, #2, & #3 - HAP Emissions

Registration #80517

Stack #1

Point #1-4

Segment #1-4 SCC # 10200202, 10200401, 10200501, 10200601

2005 Fuel Usage

Emission Unit	Heat Input (MMBtu/hr)	2005 Fuel Usage			
		Coal (tpy)	#6 Fuel Oil (gpy)	#2 Fuel Oil (gpy)	Natural Gas (Mscf/yr)
Boiler #1	196	38,309	202,355	0	5,463.64
Boiler #2	206	18,462	76,277	1,055	4,625.41
Boiler #3	206	21,963	537,069	2,167	6,478.63

Fuel Information

Heating Value of No. 6 Fuel Oil	149,942	Btu/gal
Heating Value of No. 2 Fuel Oil	137,228	Btu/gal
Heating Value of Coal	14,636	Btu/lb
Heating Value of Natural Gas	1,020	Btu/scf
Sulfur Content of No. 6 Fuel Oil	1.38	%
Sulfur Content of No. 2 Fuel Oil	0.18	%
Sulfur Content of Coal	0.7	%

Pollutant Name	Emission Factors				2005 Actual Emissions (tpy)		
	Coal (lb/ton)	#6 Fuel Oil (lb/10 ³ gal)	#2 Fuel Oil (lb/10 ¹² Btu)	Natural Gas (lb/10 ⁶ scf)	Boiler #1	Boiler #2	Boiler #3
Acetaldehyde	5.70E-04				1.09E-02	5.26E-03	6.26E-03
Acetophenone	1.50E-05				2.87E-04	1.38E-04	1.65E-04
Acrolein	2.90E-04				5.55E-03	2.68E-03	3.18E-03
Antimony	1.80E-05	5.25E-03			8.76E-04	3.66E-04	1.61E-03
Arsenic	4.10E-04	1.32E-03	4	2.00E-04	7.99E-03	3.84E-03	4.86E-03
Benzene	1.30E-03	2.14E-04		2.10E-03	2.49E-02	1.20E-02	1.43E-02
Benzyl Chloride	7.00E-04				1.34E-02	6.46E-03	7.69E-03
Beryllium	2.10E-05	2.78E-05	3	1.20E-05	4.05E-04	1.95E-04	2.39E-04
Biphenyl	1.70E-06				3.26E-05	1.57E-05	1.87E-05
Bis (2-ethylhexyl) phthalate	7.30E-05				1.40E-03	6.74E-04	8.02E-04
Bromoform	3.90E-05				7.47E-04	3.60E-04	4.28E-04
Cadmium	5.10E-05	3.98E-04	3	1.10E-03	1.02E-03	4.89E-04	6.71E-04
Carbon Disulfide	1.30E-04				2.49E-03	1.20E-03	1.43E-03
2-Chloroacetophenone	7.00E-06				1.34E-04	6.46E-05	7.69E-05
Chlorobenzene	2.20E-05				4.21E-04	2.03E-04	2.42E-04
Chloroform	5.90E-05				1.13E-03	5.45E-04	6.48E-04
Chromium	2.60E-04	8.54E-04	3	1.40E-03	5.07E-03	2.44E-03	3.09E-03
Chromium (VI)	7.90E-05	2.48E-04			1.54E-03	7.39E-04	9.34E-04
Cobalt	1.00E-04	8.02E-03		8.40E-05	2.52E-03	1.15E-03	2.71E-03
Cumene	5.30E-06				1.02E-04	4.89E-05	5.82E-05
Cyanide	2.50E-03				4.79E-02	2.31E-02	2.75E-02
2,4-Dinitrotoluene	2.80E-07				5.36E-06	2.58E-06	3.07E-06
Dimethyl sulfate	4.80E-04				9.19E-03	4.43E-03	5.27E-03
Ethyl benzene	9.40E-05	6.36E-05			1.81E-03	8.70E-04	1.05E-03
Ethyl chloride	4.20E-05				8.04E-04	3.88E-04	4.61E-04
Ethylene dibromide	1.20E-06				2.30E-05	1.11E-05	1.32E-05
Ethylene dichloride	4.00E-05				7.66E-04	3.69E-04	4.39E-04
Formaldehyde	2.40E-04	3.30E-02	445	1.55E-01	8.36E-03	3.86E-03	1.21E-02
Hexane	6.70E-05			1.80E-00	6.20E-03	4.78E-03	6.57E-03
Hydrochloric Acid	1.97E+00	1.06E-02	71		3.77E+01	1.81E+01	2.16E+01
Hydrogen Fluoride	7.17E-02	3.73E-02	146		1.38E+00	6.63E-01	7.97E-01
Isophorone	5.80E-04				1.11E-02	5.35E-03	6.37E-03
Lead	4.20E-04	1.51E-03	9	5.00E-04	8.20E-03	3.94E-03	5.02E-03
Manganese	4.90E-04	3.00E-03	6	3.80E-04	9.69E-03	4.64E-03	6.19E-03
Mercury	1.52E-05	7.40E-05	20	2.60E-04	5.74E-05	2.86E-05	5.19E-05
Methyl bromide	1.60E-04				3.06E-03	1.48E-03	1.76E-03
Methyl chloride	5.30E-04				1.02E-02	4.89E-03	5.82E-03
Methyl ethyl ketone	3.90E-04				7.47E-03	3.60E-03	4.28E-03
Methyl hydrazine	1.70E-04				3.26E-03	1.57E-03	1.87E-03
Methyl methacrylate	2.00E-05				3.83E-04	1.85E-04	2.20E-04
Methyl tert butyl ether	3.50E-05				6.70E-04	3.23E-04	3.84E-04
Methylene chloride	2.90E-04				5.55E-03	2.68E-03	3.18E-03
Naphthalene	1.30E-05	1.13E-03		6.10E-04	3.65E-04	1.65E-04	4.48E-04
Nickel	2.80E-04	8.45E-02	3	2.10E-03	1.39E-02	5.81E-03	2.58E-02
Phenol	1.60E-05				3.06E-04	1.48E-04	1.76E-04
Phosphorous		9.46E-03			9.57E-04	3.61E-04	2.54E-03
POM	6.09E-05	8.11E-05	24	8.76E-05	1.17E-03	5.67E-04	6.94E-04
Propionaldehyde	3.80E-04				7.28E-03	3.51E-03	4.17E-03
Selenium	1.30E-03	6.83E-04	15	2.40E-05	2.50E-02	1.20E-02	1.45E-02
Styrene	2.50E-05				4.79E-04	2.31E-04	2.75E-04
Sulfuric Acid	2.92E-01	3.38E+00	3,214		5.94E+00	2.83E+00	4.12E+00
Total Dioxins	5.42E-09	2.65E-08	1.93E-04		6.82E-08	3.26E-08	4.47E-08
Tetrachloroethylene	4.30E-05				8.24E-04	3.97E-04	4.72E-04
Toluene	2.40E-04	6.20E-03		3.40E-03	5.23E-03	2.46E-03	4.31E-03
1,1,1-Trichloroethane	2.00E-05	2.36E-04			4.07E-04	1.94E-04	2.83E-04
Vinyl acetate	7.60E-06				1.46E-04	7.02E-05	8.35E-05
Xylenes	3.70E-05	1.09E-04			7.20E-04	3.46E-04	4.36E-04

Vaporizers #1, #2, & #3 - HAP Emissions

Registration #80517

Stack #1

Point #5, 6, 41

Segment #1-3 SCC # 10200402, 10200502, 10200602

2005 Fuel Usage

Emission Unit	Heat Input (MMBtu/hr)	2005 Fuel Usage		
		#6 Fuel Oil (gpy)	#2 Fuel Oil (gpy)	Natural Gas (Mscf/yr)
Vaporizer #1	43	1,045,614	0	20,214.18
Vaporizer #2	43	1,064,346	0	12,718.61
Vaporizer #3	22	0	0	2,925.66

Fuel Information

Heating Value of No. 6 Fuel Oil	149,942	Btu/gal
Heating Value of No. 2 Fuel Oil	137,228	Btu/gal
Heating Value of Natural Gas	1,020	Btu/scf
Sulfur Content of No. 6 Fuel Oil	1.38	%
Sulfur Content of No. 2 Fuel Oil	0.18	%

Pollutant Name	Emission Factors			2005 Actual Emissions (tpy)		
	#6 Fuel Oil (lb/10 ³ gal)	#2 Fuel Oil (lb/10 ¹² Btu)	Natural Gas (lb/mm scf)	Vaporizer #1	Vaporizer #2	Vaporizer #3
Acetaldehyde						
Acetophenone						
Acrolein						
Antimony	5.25E-03			2.74E-03	2.79E-03	
Arsenic	1.32E-03	4	2.00E-04	6.92E-04	7.04E-04	2.93E-07
Benzene	2.14E-04		2.10E-03	1.33E-04	1.27E-04	3.07E-06
Benzyl Chloride						
Beryllium	2.78E-05	3	1.20E-05	1.47E-05	1.49E-05	1.76E-08
Biphenyl						
Bis (2-ethylhexyl) phthalate						
Bromoform						
Cadmium	3.98E-04	3	1.10E-03	2.19E-04	2.19E-04	1.61E-06
Carbon Disulfide						
Chlorine						
2-Chloroacetophenone						
Chlorobenzene						
Chloroform						
Chromium	8.54E-04	3	1.40E-03	4.61E-04	4.63E-04	2.05E-06
Chromium (VI)	2.48E-04			1.30E-04	1.32E-04	
Cobalt	6.02E-03		8.40E-05	3.15E-03	3.20E-03	1.23E-07
Cumene						
Cyanide						
2,4-Dinitrotoluene						
Dimethyl sulfate						
Ethyl benzene	6.36E-05			3.33E-05	3.38E-05	
Ethyl chloride						
Ethylene dibromide						
Ethylene dichloride						
Formaldehyde	3.30E-02	445	1.55E-01	1.88E-02	1.85E-02	2.27E-04
Hexane			1.80E-00	1.82E-02	1.14E-02	2.63E-03
Hydrochloric Acid	1.06E-02	71		5.57E-03	5.67E-03	0.00E-00
Hydrogen Fluoride	3.73E-02	146		1.95E-02	1.99E-02	0.00E-00
Isophorone						
Lead	1.51E-03	9	5.00E-04	7.94E-04	8.07E-04	7.31E-07
Manganese	3.00E-03	6	5.80E-04	1.57E-03	1.60E-03	5.56E-07
Mercury	7.40E-05	20	2.60E-04	4.13E-05	4.10E-05	3.80E-07
Methyl bromide						
Methyl chloride						
Methyl ethyl ketone						
Methyl hydrazine						
Methyl methacrylate						
Methyl tert butyl ether						
Methylene chloride						
Naphthalene	1.13E-03		6.10E-04	5.97E-04	6.05E-04	8.92E-07
Nickel	8.45E-02	3	2.10E-05	4.42E-02	4.50E-02	3.07E-06
Phenol						
Phosphorous	9.46E-03			4.95E-03	5.03E-03	
PQM	8.11E-05	24	8.76E-05	4.33E-05	4.37E-05	1.28E-07
Propionaldehyde						
Selenium	6.83E-04	15	2.40E-05	3.57E-04	3.64E-04	3.51E-08
Styrene						
Sulfuric Acid	3.38E-00	3,214		1.77E-00	1.80E-00	0.00E-00
Total Dioxins	2.65E-08	1.93E-04		1.39E-08	1.41E-08	0.00E-00
Tetrachloroethylene						
Toluene	6.20E-03		3.40E-03	3.28E-03	3.32E-03	4.97E-06
1,1,1-Trichloroethane	2.36E-04			1.23E-04	1.26E-04	
Vinyl acetate						
Xylenes	1.09E-04			5.70E-05	5.80E-05	

Coal Handling System (ES-Coal)

Wind Erosion Emissions

2005 Coal Storage Pile Emissions $E = 1.7(\pi/1.5)^{1/4}(365 \cdot p/365)^{1/4} \cdot (0.15)$ Buonicore, Anthony J. and Wayne T. Davis, *Air Pollution Engineering Manual*, New York: 1992, Pgs. 136-137.

Description	Emission Source ID	Material	Avg. Size for 2005 (acres)	Avg. Silt Content (%)	No. of days with ≥ 0.01 in of precip. ²	Time Wind Speed > 12 mph ¹ (%)	Emission Factor (lb/acre/day)	PM ₁₀ /PM Ratio	PM _{2.5} /PM Ratio	2005 Emissions (tpy)		
Coal Storage Pile	C11-P	Coal	1.5	2.2	130	32.61	3.49	0.5	0.2	PM	PM ₁₀	PM _{2.5}
										0.96	0.48	0.19

¹ Taken from meteorological data for Roanoke, Virginia from 1993.

² Taken from AP-42, Section 13.2.2 "Unpaved Roads," December 2003, Figure 13.2.2.1

Transfer Fugitive Emissions Coal Conveying

Total Coal Consumed (CY 2005)	78,734 tons
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Emissions Source	Emission Source ID	2005 Process Rate (tpy) ¹	Maximum Process Rate (ton/hr)	Control Device	Control Efficiency (%)	Emission Factor (lb/ton) ²				2005 Emissions (tpy)		
						PM	PM ₁₀	PM _{2.5}	PM	PM ₁₀	PM _{2.5}	PM _{2.5}
Crusher	C11-02	78,734	100	Enclosed	70%	0.036	0.015	0.015	0.43	0.18	0.18	0.18
Rail Drop onto Vibrators	C11-01	78,734	100	Enclosed	70%	0.00171	0.00081	0.00025	0.02	0.01	0.00	0.00
Coal Shaking	C11-20	78,734	100	None	0%	0.025	0.0087	0.0087	0.98	0.34	0.34	0.34
Coal Vibrators	C11-23	78,734	100	Underground	70%	0.025	0.0087	0.0087	0.30	0.10	0.10	0.10
Coal Vibrators	C11-24	78,734	100	Underground	70%	0.025	0.0087	0.0087	0.30	0.10	0.10	0.10
Coal Conveyor Transfers	C11-03	78,734	100	Enclosed	70%	0.00171	0.00081	0.00025	0.02	0.01	0.00	0.00
Coal Conveyor Transfers	C11-6	78,734	100	Enclosed	70%	0.00171	0.00081	0.00025	0.02	0.01	0.00	0.00
Coal Conveyor Transfers	C11-7	78,734	100	Enclosed	70%	0.00171	0.00081	0.00025	0.02	0.01	0.00	0.00
Coal Conveyor Transfers	C11-8	78,734	100	Enclosed	70%	0.00171	0.00081	0.00025	0.02	0.01	0.00	0.00
Coal Conveyor Transfers	C11-9	78,734	100	Enclosed	70%	0.00171	0.00081	0.00025	0.02	0.01	0.00	0.00
Conveyor Drop onto Pile	C11-19	78,734	100	Enclosed	70%	0.00171	0.00081	0.00025	0.02	0.01	0.00	0.00
Reclaim Drop into Vessel	No ID	787	1	none	0%	0.00171	0.00081	0.00025	0.00	0.00	0.00	0.00
Pile Transfer to Hopper	No ID	78,734	100	Enclosed	70%	0.00171	0.00081	0.00025	0.02	0.01	0.00	0.00

¹ The total coal throughput is equal to the sum of the coal consumed by each boiler

² Emission factors

Emission factor calculated using equation (1) from AP-42 Section 13.2.4 (Aggregate Handling and Storage Piles)

$E = k(0.002HUS)^{1/4}(KAG)^{1/4}$

Where:

E = emission factor

k = particle size and pile - 0.74 for PM₁₀, 0.35 for PM_{2.5}, and 0.11 for PM_{2.5}

H = mean wind speed - 10 mph

M = material moisture content (%) - 4.8% (Coal Sampling August 2003)

This data was provided in AP-42 Section 13.2.4 Aggregate Handling and Storage Piles (January 1995)

Crusher, Shaking, and vibrating emission factors taken from AP-42 Section 11.19.2 (August 2004)

³ Assumes 1 percent of coal is reclaimed from the belt

DOWTHERM Heat Transfer System (ES-Dow)

DOWTHERM 2005 CY Actual Emissions

Pollutant	2005 CY Emissions ¹	
	(lb/hr)	(tpy)
Biphenyl ²	0.87	3.82
VOC ³	3.23	14.16

1. Dowtherm emissions are assumed to be constant (i.e., the system runs continuously)
2. Dowtherm is assumed 27% Biphenyl
3. Dowtherm is assumed 100% VOC.

2005 Nylon Production Units 12.7

Historical Dowtherm Information

Year	Dowtherm Received (lb)	Waste Shipments (lb)	Fraction Dowtherm (%)	Dowtherm Shipped (lb)
2005	24,920	0		
2004	22,501	0		
2003	22,500	1,050	10%	105
		34,650	10%	3,465
2002	0	40,000	100%	40,000
		4,550	20%	910
		700	10%	70
2001	21,960	0		
2000	0	0		
1999	43,620	8,400	10%	840
		350	20%	70
1998	45,280	80,000	20%	16,000
		18,550	10%	1,855
1997	44,260	0	10%	0
1996	86,140	20,265	100%	20,265
		15,025	20%	3,005
1995	44,240	26,920	20%	5,384
1994	0	0		0
1993	42,980	0		0
1992	46,240	0		0
Totals	444,641	250,460		91,969

1992 - 2005 Dowtherm Summary				Nylon Production		Dowtherm Emissions (lb/unit product)
INPUT (lbs)	OUTPUT (lbs)	NET (lbs)	Average Emissions ¹ (lbs/yr)	1992 - 2005 Total (units)	Average (units/yr)	
4.45E+05	9.20E+04	3.53E+05	2.52E+04	158.2	11.3	2.23E+03

1. Assumes all Dowtherm purchased that is not shipped off site is lost to fugitive emissions.

Nylon Production Facility (ES-Nylon)

Registration #80517

Stack #4

Point #20

SCC # 30102400

2005 CY Gross Spun Nylon (Nylon Production Units)

12.7

Nylon Spinning Production Emissions from BCF

Pollutant	Emission Factor (lb/Prod. Unit)	2005 Emissions (tpy)
VOC ¹	98	0.62
Oil Mist ^{1,3}	1022	6.49
PM ¹	1568	9.96
PM ₁₀ ²	1332.8	8.47
PM _{2.5} ²	470.4	2.99

Nylon Pre-polymerizer CP Emissions from BCF

Pollutant	Emission Factor (lb/Prod. Unit)	2005 Emissions (tpy)
PM ¹	14	0.09
PM ₁₀ ²	11.9	0.08
PM _{2.5} ²	4.2	0.03

Nylon Pre-evaporator CP Emissions from BCF

Pollutant	Emission Factor (lb/Prod. Unit)	2005 Emissions (tpy)
PM ¹	777	4.94
PM ₁₀ ²	660	4.20
PM _{2.5} ²	233	1.48

1. Emission factor is from the stack test on CP3 (January 1991). Emissions for CP1, CP2, & CP4 are assumed to have identical emission factors relative to production capacity.

2. Total PM₁₀ is 85% of total PM and total PM_{2.5} is 30% of total PM (EPA's PM Calculator: for Chemical Manufacturing, Synthetic Fibers, Fiber Handling and Storage, SCC - 30102435).

3. Oil mist emissions are assumed to be PM.

Finishing Oil Emissions

Glutaraldehyde Finishing ⁴	
Mass Fraction Methanol	0.005
2005 CY Glutaraldehyde Usage (lbs)	8,535
2005 Methanol Emissions (lbs)	42.675
Kathon Finishing ⁴	
Mass Fraction VOC	0.017
2005 CY Kathon Usage (lbs)	3,306
2005 VOC Emissions (lbs)	56.202

4. Assumes all VOC in finishing oils will be emitted through bulking chest exhaust stack.

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Lycra Production Areas - Point Source Emissions

Registration #80517

Stack #5

Point #21, 26

Segment #1

SCC # 30101899

Classic Lycra Point Sources		2005 Tested DMAc Emission Rate (lb/hr)				
Source Name	Emission Point	1Q	2Q	3Q	4Q	2005 Avg. ¹
5N22S S. Exhaust	7-247	3.631	2.155	1.332	2.803	2.480
5N22S S. Exhaust	7-247a	4.019	4.439	2.017	3.253	3.432
S. Exhaust	7-247b	3.598	2.677	0.810	2.997	2.521
S1N134 S. Exhaust	7-250	0.099	0.113	0.096	0.304	0.153
S1N134 S. Exhaust	7-250a	1.408	1.159	0.425	0.668	0.915
A.G.B.O.	7-278	0.102	0.052	0.052	0.065	0.068
A.G.B.O.	7-278b	0.204	0.146	0.109	0.132	0.148
S. Exhaust	7-291	0.876	0.492	0.324	0.413	0.526
S. Exhaust	7-292	0.990	0.567	0.326	0	0.471
S. Exhaust	7-303	2.242	0.458	0.547	0.038	0.821
R. Exhaust	7-304	1.482	0.445	0.398	0.108	0.608
S. Exhaust	7-309	0	0.048	0.022	0.041	0.028
R. & S. Exhaust	7-348	3.024	3.309	1.877	2.956	2.792
R. & S. Exhaust	7-348a	1.052	0.431	0.472	0.672	0.657
P. Exhaust	7-349	0.241	0.142	0.125	0.174	0.171
5114 S. Exhaust	7-652	0.464	1.060	1.387	1.423	1.084
P. Exhaust	7-653	0.006	0.006	0.012	0.010	0.009
S. Exhaust	7-654	1.671	0.008	0.005	0.357	0.510
S. Exhaust	7-29	0.473	0.216	0.161	0.260	0.278
S. Exhaust	7-66	0.070	0.315	0.212	0.318	0.229
S. Exhaust	7-67	0.151	0.051	0.040	0.057	0.075
R. Exhaust	7-68	2.183	1.191	1.107	1.753	1.559
P. Exhaust	7-7	0.124	0.115	0.178	0.064	0.120
S. Exhaust	7-76	0.222	0.027	0.038	0.046	0.083
S. Exhaust	7-83	0.347	0.153	0.136	0.303	0.235
A.G. Cubicle	7-84	0.050	0.120	0.125	0.144	0.110
Classic Lycra Totals:		28.729	19.895	12.333	19.359	20.083

NAX Lycra Point Sources		2005 Tested DMAc Emission Rate (lb/hr)				
Source Name	Emission Point	1Q	2Q	3Q	4Q	2005 Avg. ¹
R. Exhaust	6-473	0.014	0.034	0.041	0.025	0.029
U. Exhaust	6-474	0.032	0.029	0.029	0.026	0.029
R. Exhaust	6-475	0.063	0.050	0.053	0.075	0.060
U. Exhaust	6-476	0.049	0.035	0.050	0.033	0.042
P. Exhaust	6-477	0.071	0.056	0.083	0.071	0.070
M. Exhaust	6-478	0.030	0.021	0.027	0.021	0.025
R. Exhaust	6-479	0.060	0.076	0.040	0.067	0.061
P. Exhaust	6-480	0.018	0.016	0.021	0.018	0.018
H.R. Exhaust	6-481	0	0	0	0	0.000
M. Exhaust	6-482	0.106	0.178	0.100	0.071	0.114
M. Exhaust	6-483	0.075	0.106	0.065	0.096	0.086
U. Exhaust	6-484	0.045	0.031	0.028	0.026	0.033
A. Exhaust	6-488	0.113	0.116	0.434	1.180	0.461
NAX Total:		0.676	0.748	0.971	1.709	1.028

1. Average for four quarters of 2005.

Total	21.111	Total (lb/hr)
	92.47	Total (tpy)
	184,932	Total (lb/yr)

Lycra Production Areas - Point Source Emissions cont.

Registration #80517

Solvent Recovery Point Sources		Emission Rate ¹	
Source Description	Stack ID	lb/hr	lb/yr
Dehydration Feed Tank 1	8-75	0.0062	54.3
Batch Tank 2	8-76	0.0457	400.3
Dehydration Feed Tank 2	8-77	0.153	1,340.3
Batch Tank 3	8-78	0.0211	184.8
Silicon Separation Tank A	8-42	0.0279	244.4
Silicon Separation Tank B	8-43	0.0227	198.9
Polymer Supply Tank 1	8-44	0.1563	1,369.2
Utility Tank 1	8-51	0.0004	3.5
Utility Tank 3	8-52	0.0007	6.1
Dehydration Feed Tank 3	8-202	0.0061	53.4
Utility Tank 2	8-208	0.0018	15.8
Dehydration Column 3 Ex-Vent Pot	8-87	0.00006	0.5
Purification Column 3 Ex-Vent Pot	8-86	0.004844	42.4
#3 Product Storage Tank	8-108	0.0001	0.9
Neutralization Feed Tank	8-94	0.0001	0.9
Tarstill Ex-Vent Pot	8-194	0.00023	2.0
DMAc Segregation Tank	8-206	0.0161	141.0
Aqueous Waste Tank	8-53	0.0166	145.4
1. Emission rate during September 1991 stack test		Total	4,204.1
			lbs/yr
			2.10
			tpy

Lycra Production Areas - DMAc Fugitive Emissions

Registration #80517

Reference	Emission Factor (kg/hr/source)				
	Valves	Pumps	Flanges	Open Lines	Sample Points
SOCMI Screening ¹	0.000165	0.00187	0.000081	0.0015	0.015

1. Emission factors taken from Table 2-5 (with a screening value < 10,000 ppm.) in *Protocol for Equipment Leak Emission Estimates*, November 1995.

Fugitive VOC Emissions - SOCMI Screening Factors

Area Description	# of Valves	# of Pumps	# of Flanges	# of Open Lines	# of Sample Points	Fugitive Emissions (kg/hr)	Fugitive Emissions (lb/yr)	VOC Emissions (lb/yr)	VOC Emissions (tpy)
NAX	220	13	530	63	5	0.27	5,214	5,214	2.6
Classic	250	16	540	78	9	0.37	7,146	7,146	3.6
Beuger	85	4	210	24	3	0.12	2,317	2,317	1.2
Solvent Recovery	892	32	1784	196	23	1.00	19,312	19,312	9.7
Unloading & Misc. Tanks	360	22	600	48	12	0.40	7,725	7,725	3.9
TOTAL:							41,715	41,715	20.9

2005 Actual HAP Emissions Summary

Pollutant Name	2005 Actual Emissions (tpy)									
	Boiler #1	Boiler #2	Boiler #3	Vaporizer #1	Vaporizer #2	Vaporizer #3	Lyera Production Area	Nylon Production Area	Dowtherm Losses	Facility Total
Acetaldehyde	1.09E-02	5.26E-03	6.26E-03	--	--	--	--	--	--	2.24E-02
Acetophenone	2.87E-04	1.38E-04	1.65E-04	--	--	--	--	--	--	5.91E-04
Acrolein	5.55E-03	2.68E-05	3.18E-03	--	--	--	--	--	--	1.14E-02
Antimony	8.76E-04	3.66E-04	1.61E-03	2.74E-03	2.79E-03	--	--	--	--	8.39E-03
Arsenic	7.99E-03	3.84E-03	4.86E-03	6.92E-04	7.04E-04	2.93E-07	--	--	--	1.81E-02
Benzene	2.49E-02	1.20E-02	1.43E-02	1.33E-04	1.27E-04	3.07E-06	--	--	--	5.15E-02
Benzyl Chloride	1.34E-02	6.46E-03	7.69E-03	--	--	--	--	--	--	2.76E-02
Beryllium	4.05E-04	1.95E-04	2.39E-04	1.47E-05	1.49E-05	1.76E-08	--	--	--	8.68E-04
Biphenyl	3.26E-05	1.57E-05	1.87E-05	--	--	--	--	--	3.82E+00	3.82E+00
Bis (2-ethylhexyl) phthalate	1.40E-03	6.74E-04	8.02E-04	--	--	--	--	--	--	2.87E-03
Bromoform	7.47E-04	3.60E-04	4.28E-04	--	--	--	--	--	--	1.54E-03
Cadmium	1.02E-03	4.89E-04	6.71E-04	2.19E-04	2.19E-04	1.61E-06	--	--	--	2.62E-03
Carbon Disulfide	2.49E-03	1.20E-03	1.43E-03	--	--	--	--	--	--	5.12E-03
2-Chloroacetophenone	1.34E-04	6.46E-05	7.69E-05	--	--	--	--	--	--	2.76E-04
Chlorobenzene	4.21E-04	2.03E-04	2.42E-04	--	--	--	--	--	--	8.66E-04
Chloroform	1.13E-03	5.45E-04	6.48E-04	--	--	--	--	--	--	2.32E-03
Chromium	5.07E-03	2.44E-03	3.09E-03	4.61E-04	4.63E-04	2.05E-06	--	--	--	1.15E-02
Chromium (VI)	1.54E-03	7.39E-04	9.34E-04	1.30E-04	1.32E-04	--	--	--	--	3.47E-03
Cobalt	2.52E-03	1.15E-03	2.71E-03	3.15E-03	3.20E-03	1.23E-07	--	--	--	1.27E-02
Cumene	1.02E-04	4.89E-05	5.82E-05	--	--	--	--	--	--	2.09E-04
Cyanide	4.79E-02	2.31E-02	2.75E-02	--	--	--	--	--	--	9.84E-02
2,4-Dinitrotoluene	5.36E-06	2.58E-06	3.07E-06	--	--	--	--	--	--	1.10E-05
Dimethyl sulfate	9.19E-03	4.43E-03	5.27E-03	--	--	--	--	--	--	1.89E-02
Ethyl benzene	1.81E-03	8.70E-04	1.05E-03	3.33E-05	3.38E-05	--	--	--	--	3.79E-03
Ethyl chloride	8.04E-04	3.88E-04	4.61E-04	--	--	--	--	--	--	1.65E-03
Ethylene dibromide	2.50E-05	1.11E-05	1.32E-05	--	--	--	--	--	--	4.72E-05
Ethylene dichloride	7.66E-04	3.69E-04	4.39E-04	--	--	--	--	--	--	1.57E-03
Formaldehyde	8.36E-03	3.86E-03	1.21E-02	1.88E-02	1.85E-02	2.27E-04	--	--	--	6.19E-02
Hexane	6.20E-03	4.78E-03	6.57E-03	1.82E-02	1.14E-02	2.63E-05	--	--	--	4.98E-02
Hydrochloric Acid	3.77E+01	1.81E+01	2.16E+01	5.57E-03	5.67E-03	--	--	--	--	7.74E+01
Hydrogen Fluoride	1.38E+00	6.63E-01	7.97E-01	1.95E-02	1.99E-02	--	--	--	--	2.88E+00
Isophorone	1.11E-02	5.35E-03	6.37E-03	--	--	--	--	--	--	2.28E-02
Lead	8.20E-03	3.94E-03	5.02E-03	7.94E-04	8.07E-04	7.31E-07	--	--	--	1.88E-02
Manganese	9.69E-03	4.64E-03	6.19E-03	1.57E-03	1.60E-03	5.56E-07	--	--	--	2.37E-02
Mercury	5.74E-05	2.86E-05	3.19E-05	4.13E-05	4.10E-05	3.80E-07	--	--	--	2.21E-04
Methanol	--	--	--	--	--	--	--	2.13E-02	--	2.13E-02
Methyl bromide	3.06E-03	1.48E-03	1.76E-03	--	--	--	--	--	--	6.30E-03
Methyl chloride	1.02E-02	4.89E-03	5.82E-03	--	--	--	--	--	--	2.09E-02
Methyl ethyl ketone	7.47E-03	3.60E-03	4.28E-03	--	--	--	--	--	--	1.54E-02
Methyl hydrazine	3.26E-03	1.57E-03	1.87E-03	--	--	--	--	--	--	6.69E-03
Methyl methacrylate	3.83E-04	1.85E-04	2.20E-04	--	--	--	--	--	--	7.87E-04
Methyl tert butyl ether	6.70E-04	3.23E-04	3.84E-04	--	--	--	--	--	--	1.38E-03
Methylene chloride	5.55E-03	2.68E-03	3.18E-03	--	--	--	--	--	--	1.14E-02
Naphthalene	5.65E-04	1.65E-04	4.48E-04	5.97E-04	6.05E-04	8.92E-07	--	--	--	2.18E-03
Nickel	1.39E-02	5.81E-03	2.58E-02	4.42E-02	4.50E-02	5.07E-06	--	--	--	1.35E-01
Phenol	3.06E-04	1.48E-04	1.76E-04	--	--	--	--	--	--	6.30E-04
Phosphorous	9.57E-04	3.61E-04	2.54E-03	4.95E-03	5.03E-03	--	--	--	--	1.38E-02
POM	1.17E-03	5.67E-04	6.94E-04	4.53E-05	4.37E-05	1.28E-07	--	--	--	2.52E-03
Propionidenitrile	7.28E-03	3.51E-03	4.17E-03	--	--	--	--	--	--	1.50E-02
Selenium	2.50E-02	1.20E-02	1.45E-02	3.57E-04	3.64E-04	3.51E-08	--	--	--	5.22E-02
Styrene	4.79E-04	2.31E-04	2.75E-04	--	--	--	--	--	--	9.84E-04
Sulfuric Acid	5.94E+00	2.83E+00	4.12E+00	1.77E+00	1.80E+00	--	--	--	--	1.65E+01
Total Dioxins	6.82E-08	3.26E-08	4.47E-08	1.39E-08	1.41E-08	--	--	--	--	1.73E-07
Tetrachloroethylene	8.24E-04	3.97E-04	4.72E-04	--	--	--	--	--	--	1.69E-03
Toluene	5.23E-03	2.46E-03	4.31E-03	3.28E-03	3.32E-03	4.97E-06	--	--	--	1.86E-02
1,1,1-Trichloroethane	4.07E-04	1.94E-04	2.83E-04	1.23E-04	1.26E-04	--	--	--	--	1.13E-03
Vinyl acetate	1.48E-04	7.02E-05	8.35E-05	--	--	--	--	--	--	2.99E-04
Xylenes	7.20E+04	3.46E-04	4.36E-04	5.70E-05	5.80E-05	--	--	--	--	1.62E-03

Attachment A

Powerhouse Stack SO₂ Emission Calculation Methodology & Monitoring Requirements

A. The permittee shall calculate the boiler sulfur dioxide emission rate as follows:

Equation 1

$$SO_{2\text{boiler}} = \sum_{i=1}^n BC_i + \sum_{i=1}^n BD_i + \sum_{i=1}^n BR_i$$

Where:

$SO_{2\text{boiler}}$ = Total sulfur dioxide emission rate in pounds per hour from all boilers.

BC_i = SO₂ emission rate in pounds per hour from each boiler (i) burning coal using DEQ-approved pollutant specific emission factors in Table 1.

BD_i = SO₂ emission rate in pounds per hour from each boiler (i) burning distillate oil using DEQ-approved pollutant specific emission factors in Table 1.

BR_i = SO₂ emission rate in pounds per hour from each boiler (i) burning residual oil using DEQ-approved pollutant specific emission factors in Table 1.

Table 1. SO₂ Emission Factors

Fuel Type	Emission Factor ⁽²⁾	Emission Factor Source
Bituminous Coal	601.2*((Mpph steam ⁽¹⁾)/450)*((lbs SO ₂ /MMBtu) ⁽³⁾ /1.062)	Source-specific
No. 1 Fuel Oil	142 S lbs/1000 gal	AP-42, Section 1.3
No. 2 Fuel Oil	142 S lbs/1000 gal	AP-42, Section 1.3
No. 4 Fuel Oil	150 S lbs/1000 gal	AP-42, Section 1.3
No. 5 Fuel Oil	157 S lbs/1000 gal	AP-42, Section 1.3
No. 6 Fuel Oil	157 S lbs/1000 gal	AP-42, Section 1.3

(1) **Mpph steam** equals the hourly average total steam flow from coal-firing.

(2) **S** equals the percent sulfur by weight of the fuel oil or coal.

(3) **lbs SO₂/MMBtu** equals the weighted average coal equivalent SO₂ content.

B. The determination of the hourly average total steam flow from coal-firing (Mpph steam) shall be done according to the following methodology:

1. Coal shall not be fired to any boiler prior to the boiler being “on-line”. An “on-line” boiler is defined as a boiler whose steam flow output is greater than 30 thousand pounds of steam per hour (Mpph) and whose steam drum pressure is greater than 300 pounds per square inch gauge (psig). If either of these conditions is not true, the boiler is considered to be “off-line”.
2. For each boiler (i), determine the hourly average input of natural gas in thousand standard cubic feet per hour (Mscfh) and distillate and residual oil in gallons per minute (gpm).
3. For each boiler (i), determine the hourly average steam flow output in Mpph and the hourly average boiler steam drum pressure in psig. Classify each boiler as being “on-line” or “off-line”.
4. For each on-line boiler (i), determine the equivalent steam output from natural gas using the following equation:

Equation 2

$$STGAS_i = BG_i * 0.804$$

Where:

$STGAS_i$ = Steam flow output from each boiler (i), in Mpph, resulting from burning natural gas.

BG_i = Hourly average natural gas flow rate to each boiler (i) in thousand standard cubic feet per hour (Mscfh).

0.804 = Conversion factor including natural gas higher heating value, steam enthalpy rise, and boiler efficiency.

5. For each on-line boiler (i), determine the equivalent steam output from residual and distillate oil using the following equation:

Equation 3

$$STOIL_i = BO_i * C * (BTU_a \div BTU_i)$$

Where:

$STOIL_i$ = Steam flow output from each boiler (i), in Mpph, resulting from burning fuel oil.

- BO_i = Hourly average oil flow rate of fuel oil to each boiler (i) in gallons per minute.
- C = Steam enthalpy rise and boiler efficiency constant, including oil higher heating value shown in Table 2, steam enthalpy rise, conversion from minutes (gpm) to hours (hourly steam flow), boiler efficiency, and division by 1000 for thousands of pounds per hour (pph).
- BTU_a = The actual higher heating value of the fuel oil in Btu per gallon.
- BTU_i = The theoretical higher heating value of the fuel oil in Btu per gallon.

Table 2. Fuel Btu Values and Boiler Constants

Fuel Type	Theoretical Higher Heating Value (BTU _i)	Steam Enthalpy & Boiler Efficiency Constant (C)
No. 1 Fuel Oil	134,000	6.357
No. 2 Fuel Oil	138,000	6.547
No. 4 Fuel Oil	144,000	6.816
No. 5 Fuel Oil	146,000	6.910
No. 6 Fuel Oil	150,000	7.100

6. For each on-line boiler (i), determine the hourly average steam flow from coal-firing (Mpph steam) using the following equation:

Equation 4

$$STCOAL_i = STEAM_i - STGAS_i - STOIL_i$$

Where:

- $STCOAL_i$ = Steam flow output from each boiler (i), in Mpph, resulting from burning coal.
- $STEAM_i$ = Total steam flow output from each boiler (i) in Mpph.
- $STGAS_i$ = Steam flow output from each boiler (i), in Mpph, resulting from burning natural gas.
- $STOIL_i$ = Steam flow output from each boiler (i), in Mpph, resulting from burning oil.

Vaporizer SO₂ Emission Calculations

The permittee shall calculate the vaporizer sulfur dioxide emission rate as follows:

Equation 5

$$SO_{2\text{vaporizer}} = \sum_{i=1}^n VO_i$$

Where:

$SO_{2\text{vaporizer}}$ = Total sulfur dioxide emission rate from all vaporizers in pounds per hour.

VO_i = SO₂ emission rate from each vaporizer (i) burning fuel oil, in pounds per hour, using DEQ-approved pollutant specific emission factors in Table 1.

Total Stack (2-205) SO₂ Emission Calculations

The permittee shall calculate the total stack sulfur dioxide emission rate as follows:

Equation 6

$$SO_{2\text{total}} = SO_{2\text{boiler}} + SO_{2\text{vaporizer}}$$

Where:

$SO_{2\text{total}}$ = Total sulfur dioxide emission rate from the powerhouse stack (2-205) in pounds per hour.

$SO_{2\text{boiler}}$ = Total sulfur dioxide emission rate from all boilers in pounds per hour.

$SO_{2\text{vaporizer}}$ = Total sulfur dioxide emission rate from all vaporizers in pounds per hour.

Monitoring and Recordkeeping

Based on the total sulfur dioxide emission rate from all boilers ($SO_{2\text{boiler}}$), monitoring and recordkeeping shall be performed using the following methodology:

A. Total Boiler SO₂ Emission Rate ($SO_{2\text{boiler}}$) Less Than 450.9 lbs/hr

1. A coal quality certification sheet shall be provided by the coal supplier for each shipment, identifying each coal car or truck included in that shipment. The certification sheet is to be provided to the plant for verification prior to unloading.

2. Coal is to be sampled and analyzed by the supplier using appropriate ASTM methods as defined by EPA Method 19 (reference 40 CFR 60, Appendix A). Data shall include percent sulfur content and higher heating value on an as-received and dry basis, and the equivalent SO₂ content as lbs/MMBtu.
 3. Each coal car or truck shall be identified, verified versus the quality certification sheet, and documented by the plant when it is unloaded, along with the location to which the coal was delivered (i.e., to the coal storage pile or to the raw coal silos).
 4. The facility shall conduct one monthly random audit sample and analysis of coal received for comparison to the quality certification from that sampled by the coal supplier. The coal is to be analyzed by the facility using appropriate ASTM methods as defined by EPA Method 19 (reference 40 CFR 60, Appendix A). Sample data shall include the percent sulfur content, higher heating value and the equivalent SO₂ content as lb/MMBtu. Details of the sampling and analysis shall be arranged with the Director, Valley Region. The results shall be recorded and retained for recordkeeping purposes.
 5. If the monthly random audit sample sulfur content result (as lbs of SO₂/MMBtu on an as-fired basis) exceeds the supplier's certification by 20% or greater, contact shall be made with the supplier to ensure that the proper quality control procedures are being followed. A second spot sample would be taken and analyzed for sulfur content. If a result of 20% or greater is confirmed by the second sample, the facility shall generate a composite coal sample by taking daily samples upstream of all operating raw coal feeders. The composite sample shall be quartered on a monthly basis to obtain a representative sample. Coal is to be analyzed by the facility using appropriate ASTM methods as defined by EPA Method 19 (reference 40 CFR 60, Appendix A). Details of the sampling and analysis shall be arranged with the Director, Valley Region. The facility shall use results of the composite coal sampling and analysis for its SO₂ emission calculations until the composite sample compares within 20% of the supplier certification. Composite coal sampling may be discontinued once this occurs.
- B. Total Boiler SO₂ Emission Rate ($SO_{2\text{boiler}}$) Between 450.9 lbs/hr and 541.1 lbs/hr for More Than Two Individual Hours in a Week
1. If no Dowtherm[®] vaporizer ((Ref. 2-205(V#1), (Ref. 2-205(V#2), (Ref. 2-205(V#3)) is firing distillate or residual oil, no change to the compliance methodology in *Section A* above is required.
 2. If any Dowtherm[®] vaporizer ((Ref. 2-205(V#1), (Ref. 2-205(V#2), (Ref. 2-205(V#3)) is firing distillate or residual oil, the following coal quality certification step in addition to the requirements in *Section A* above is required:
 - The facility shall generate a composite coal sample by taking daily samples upstream of all operating raw coal feeders. The composite sample shall be quartered on a monthly basis to obtain a representative sample. Coal is to be analyzed by the facility using appropriate ASTM methods as defined by EPA Method 19 (reference 40 CFR 60, Appendix A). Details of the sampling and analysis shall be arranged with the

Director, Valley Region. The facility shall use results of the composite coal sampling and analysis for its SO₂ emission calculations.

3. If total SO₂ emissions from the boilers as calculated above do not exceed 450.9 lbs/hr for a continuous 30-day period following the upward excursion, coal quality certification shall fall back to the steps contained in *Section A*.

C. Total Boiler SO₂ Emission Rate ($SO_{2\text{boiler}}$) Greater Than 541.1 lbs/hr for More Than Two Individual Hours in a Week

1. If the total powerhouse stack SO₂ emissions ($SO_{2\text{total}}$) are less than 591.0 pounds per hour, proceed with the monitoring requirements contained in *Section B*.
2. If the total powerhouse stack SO₂ emissions ($SO_{2\text{total}}$) are equal to or greater than 591.0 pounds per hour for any single hour, a project shall be initiated for timely installation of a continuous emission monitor (CEM). Details of the CEM installation shall be arranged with the Director, Valley Region. Upon installation of the CEM, no further SO₂ sampling, analysis, and calculations would be required for compliance purposes.

ATTACHMENT B

Minor NSR Permit
(Dated November 29, 2001 as amended July
25, 2005)



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

STATIONARY SOURCE PERMIT TO MODIFY AND OPERATE

**This permit includes designated equipment subject to
New Source Performance Standards (NSPS).**

This permit supersedes your permit dated August 15, 2001.

In compliance with the Federal Clean Air Act and the Commonwealth of Virginia
Regulations for the Control and Abatement of Air Pollution,

INVISTA S.à r.l.
400 DuPont Boulevard
Waynesboro, Virginia 22980
Registration No.: 80517
Plant ID No.: 51-820-0009

is authorized to modify and operate

a synthetic fiber production facility

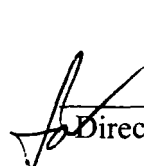
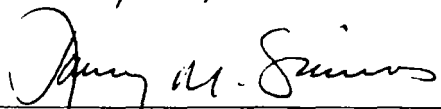
located at

400 DuPont Boulevard
Waynesboro, Virginia

in accordance with the Conditions of this permit.

Approved on November 29, 2001

Amendment date July 25, 2005

Director, Department of Environmental Quality

Permit consists of 15 pages.
Permit Conditions 1 to 44.
Attachment A.

PERMIT CONDITIONS - the regulatory reference and authority for each condition is listed in parentheses () after each condition.

APPLICATION

1. Except as specified in this permit, the permitted facility is to be modified and operated as represented in the permit application dated July 20, 1992, including amendment information dated August 25, September 8 and 13, 1993, and February 23, 1994, the permit application dated November 18, 1993, including amendment information dated December 20, 1993, January 17, February 18, April 4, May 2, 1994 and August 8, 1994, the permit application dated September 30, 1994, including amendment information dated April 15, 1997, the permit application dated November 11, 1996, including amendment information dated December 3 and 14, 1996, the permit application dated October 21, 1999, including amendment information dated November 10, 1999, February 18 and 23, July 26, August 2, 8, 9, and 28, and October 20, 2000, the permit application dated December 14, 2000, including amendment information dated January 17 and 29, and March 12, 2001, the permit application dated July 31, 2001, and the permit application dated November 19, 2001, the permit application dated March 14, 2005 and the amended permit applications dated May 16, 2005 and July 20, 2005 including supplemental information dated July 12, 2005. Any changes in the permit application specifications or any existing facilities which alter the impact of the facility on air quality may require a permit. Failure to obtain such a permit prior to construction may result in enforcement action.
(9 VAC 5-50-390 and 9 VAC 5-80-1210 D)

PROCESS REQUIREMENTS - LYCRA®

2. Previously permitted equipment at this facility prior to the date of this permit consists of:
 - Lycra® NAX polymer processing and spinning equipment (North American Lycra® Expansion)
 - Lycra® Classic production facility
(9 VAC 5-80-1100)
3. **Emission Controls** – Volatile organic compound (VOC) emissions from the Lycra® (Classic and NAX) spinning machines shall be controlled by brine-cooled condensers. The control equipment shall be provided with adequate access for inspection and shall be maintained by the permittee such that it is in proper working order at all times.
(9 VAC 5-50-260)
4. **Testing/Monitoring Ports** - The permitted facility shall be constructed so as to allow for emissions testing upon reasonable notice at any time, using appropriate methods. Test ports shall be provided when requested at the appropriate locations.
(9 VAC 5-50-30 F)

OPERATING/EMISSION LIMITATIONS - LYCRA®

5. **Emission Limits** – Emissions from Lycra® (Classic and NAX) shall not exceed the limits specified below:

Volatile Organic Compounds	37.6 lbs/hr	164.7 tons/yr
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Annual emissions shall be calculated monthly as the sum of each consecutive 12-month period.

(9 VAC 5-50-260)

RECORDS - LYCRA®

6. **On Site Records** - The permittee shall maintain records of all emission data and operating parameters necessary to demonstrate compliance with this permit. The content of and format of such records shall be arranged with the Director, Valley Region. These records shall include, but are not limited to:
- The annual hours of operation of Lycra® (Classic and NAX), calculated monthly as the sum of each consecutive 12-month period.
 - Results of quarterly performance tests as required in Condition 7.
 - Annual VOC emissions (in tons) from Lycra® (Classic and NAX), calculated monthly as the sum of each consecutive 12-month period, using emission factors and calculation methods approved by the Director, Valley Region.
 - Results of all stack tests and visible emission evaluations.
 - Manufacturer's recommendations for control device operation.

These records shall be available for inspection by the DEQ and shall be current for the most recent five years.

(9 VAC 5-50-50)

CONTINUING COMPLIANCE - LYCRA®

7. **Performance Testing** - The permittee shall conduct quarterly performance tests for VOC in accordance with NIOSH Method 2004 or INVISTA Lab Procedure SP-0905.211-01 to demonstrate compliance with the emission limits contained in Condition 5. The tests shall be submitted in accordance with the following schedule:

Time Period Covered by Report	Report Due Date
January 1 – March 31	June 1
April 1 - June 30	September 1
July 1 – September 30	December 1
October 1 - December 31	March 1

The details of the tests are to be arranged with the Director, Valley Region.
(9 VAC 50-50-30 G)

PROCESS REQUIREMENTS - NYLON

8. **Equipment List** – Previously permitted equipment at this facility prior to the date of this permit consists of:

- Nylon production facility

(9 VAC 5-80-1100)

- ✓9. **Emission Controls** – Particulate emissions from the bulking chests shall be controlled by using low-smoke finish.

(9 VAC 5-50-260)

10. **Monitoring** – The permittee shall continuously monitor and record the total supply rate for the polymer supply pumps (Ref. NP-36, NP-32, NP-52, NP-57, NP-80, NP-136, NP-102 and NP-139) in revolutions per minute (rpm).

(9 VAC 5-80-1180, 9 VAC 5-50-20 C and 9 VAC 5-50-260)

11. **Testing/Monitoring Ports** - The permitted facility shall be constructed so as to allow for emissions testing upon reasonable notice at any time, using appropriate methods. Test ports shall be provided when requested at the appropriate locations.

(9 VAC 5-50-30 F)

12. **Equipment Modification** – A change to the polymer supply pumps or polymer supply pump system may require a permit to modify and operate.

(9 VAC 5-80-1180)

OPERATING/EMISSION LIMITATIONS - NYLON

13. **Production** - The total polymer supply pump rate (Ref. NP-36, NP-32, NP-52, NP-57, NP-80, NP-136, NP-102 and NP-139) shall not exceed 132.7 revolutions per minute (rpm).

(9 VAC 5-80-1180)

14. **Emission Limits** - Emissions from the Nylon production facility shall not exceed the limits specified below:

Particulate Matter	8.6 lbs/hr	37.7 tons/yr
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Annual emissions shall be calculated monthly as the sum of each consecutive 12-month period.

(9 VAC 5-50-260)

15. **Visible Emission Limit** - Visible emissions from each of the Nylon equipment exhausts (stack reference numbers 5-25 through 5-30 and 5-32 through 5-42) shall not exceed 10% opacity as determined by the EPA Method 9 (reference 40 CFR 60, Appendix A).
(9 VAC 5-50-80 and 9 VAC 5-50-260)

RECORDS - NYLON

16. **On Site Records** - The permittee shall maintain records of all emission data and operating parameters necessary to demonstrate compliance with this permit. The content of and format of such records shall be arranged with the Director, Valley Region. These records shall include, but are not limited to:

- a. The maximum total polymer supply pump rate in revolutions per minute (rpm), recorded weekly.
- b. The annual hours of operation of the Nylon production facility, calculated monthly as the sum of each consecutive 12-month period.
- c. Average hourly particulate matter emissions (in pounds) from the Nylon production facility, calculated as a monthly average, using calculation methods approved by the Director, Valley Region.
- d. Annual particulate matter emissions (in tons) from the Nylon production facility, calculated monthly as the sum of each consecutive 12-month period, using calculation methods approved by the Director, Valley Region.
- e. Results of all stack tests and visible emission evaluations.

These records shall be available for inspection by the DEQ and shall be current for the most recent five years.

(9 VAC 5-50-50)

PROCESS REQUIREMENTS - POWERHOUSE

17. **Equipment List** – Previously permitted equipment at this facility prior to the date of this permit consists of:

- Boiler #1 (Ref. 2-205(B#1)) – Coal and oil-fired with a maximum rated heat input capacity of 196 MMBtu/hr, equipped with natural gas igniters with a total maximum rated heat input capacity of 20 MMBtu/hr
- Boiler #2 (Ref. 2-205(B#2)) – Coal and oil-fired with a maximum rated heat input capacity of 209 MMBtu/hr, equipped with natural gas igniters with a total maximum rated heat input capacity of 20 MMBtu/hr
- Boiler #3 (Ref. 2-205(B#3)) – Coal and oil-fired with a maximum rated heat input capacity of 209 MMBtu/hr, equipped with natural gas igniters with a total maximum rated heat input capacity of 20 MMBtu/hr
- Vaporizer #1 (Ref. 2-205(V#1)) - Natural gas and oil-fired with a maximum rated heat input capacity of 43 MMBtu/hr
- Vaporizer #2 (Ref. 2-205(V#2)) - Natural gas and oil-fired with a maximum rated heat input capacity of 43 MMBtu/hr
- Vaporizer #3 (Ref. 2-205(V#3)) - Natural gas and oil-fired with a maximum rated heat input capacity of 22 MMBtu/hr (NSPS, Subpart Dc)

(9 VAC 5-80-1100)

18. **Testing/Monitoring Ports** - The permitted facility shall be constructed so as to allow for emissions testing upon reasonable notice at any time, using appropriate methods. Test ports shall be provided when requested at the appropriate locations.

(9 VAC 5-50-30 F)

OPERATING/EMISSION LIMITATIONS - POWERHOUSE

✓ 19. **Fuel Throughput** - The Dowtherm[®] vaporizer (Ref. 2-205(V#3)) shall consume no more than 156×10^6 cubic feet of natural gas per year and 1,182,600 gallons of distillate oil per year, calculated monthly as the sum of each consecutive 12-month period.

(9 VAC 5-80-1180 and 9 VAC 5-50-260)

✓ 20. **Fuel** - The approved fuels for the Dowtherm[®] vaporizer (Ref. 2-205(V#3)) are distillate oil and natural gas. A change in the fuel may require a permit to modify and operate.

(9 VAC 5-80-1180)

21. **Fuel** - The approved fuels for the Dowtherm[®] vaporizers (Ref. 2-205(V#1) and 2-205(V#2)) are distillate oil, residual oil and natural gas. A change in the fuel may require a permit to modify and operate.
(9 VAC 5-80-1180)

✓22. **Fuel** - The approved fuels for the boilers (Ref. 2-205(B#1), 2-205(B#2) and 2-205(B#3)) are distillate oil, residual oil and coal. The approved fuel for the boiler igniters is natural gas. A change in the fuel may require a permit to modify and operate.
(9 VAC 5-80-1180)

✓23. **Fuel** - The distillate oil to be burned in the Dowtherm[®] vaporizer (Ref. 2-205(V#3)) shall meet the specifications below:

DISTILLATE OIL which meets the ASTM D396 specification for numbers 1 or 2 fuel oil:
Maximum sulfur content per shipment: 0.3%

(9 VAC 5-80-1180, 9 VAC 5-50-260 and 9 VAC 5-50-410)

✓24. **Fuel** - The distillate oil, residual oil and coal to be burned in the boilers (Ref. 2-205(B#1), 2-205(B#2) and 2-205(B#3)) and Dowtherm[®] vaporizers (Ref. 2-205(V#1) and 2-205(V#2)) shall meet the specifications below:

COAL:
Maximum sulfur content per shipment: 1.5%

DISTILLATE OIL which meets the ASTM D396 specification for numbers 1 or 2 fuel oil:
Maximum sulfur content per shipment: 0.5%

RESIDUAL OIL which meets the ASTM D396 specification for numbers 4, 5, or 6 fuel oil:
Maximum sulfur content per shipment: 2.0%

(9 VAC 5-80-1180)

✓25. **Fuel Certification** - The permittee shall obtain a certification from the fuel supplier with each shipment of distillate oil to be burned in the Dowtherm[®] vaporizer (Ref. 2-205(V#3)). Each fuel supplier certification shall include the following:

- a. The name of the fuel supplier;
- b. The date on which the distillate oil was received;
- c. The volume of distillate oil delivered in the shipment;
- d. A statement that the distillate oil complies with the American Society for Testing and Materials specifications for numbers 1 or 2 fuel oil;

- e. The sulfur content of the distillate oil;
- f. The method used to determine the sulfur content of distillate oil; and
- g. The higher heating value of the distillate oil.

(9 VAC 5-80-1180 and 9 VAC 5-50-410)

26. Fuel Certification - The permittee shall obtain a certification from the fuel supplier with each shipment of coal, distillate oil and residual oil to be burned in the boilers (Ref. 2-205(B#1), 2-205(B#2) and 2-205(B#3)) and Dowtherm[®] vaporizers (Ref. 2-205(V#1) and 2-205(V#2)). Each fuel supplier certification shall include the following:

- a. The name of the fuel supplier;
- b. The date on which the distillate and residual oil was received;
- c. The date on which the coal was shipped;
- d. The volume of distillate and residual oil delivered in the shipment;
- e. The weight of coal delivered in the shipment;
- f. A statement that the distillate oil complies with the American Society for Testing and Materials specifications for numbers 1 or 2 fuel oil;
- g. A statement that the residual oil complies with the American Society for Testing and Materials specifications for numbers 4, 5, or 6 fuel oil;
- h. The sulfur content of the coal, distillate and residual oil;
- i. The method used to determine the sulfur content of coal, distillate and residual oil; and
- j. The higher heating value of the coal, distillate and residual oil.

(9 VAC 5-80-1180)

27. Operating and Training Procedures - Boiler and vaporizer emissions shall be controlled by proper operation and maintenance. Boiler and vaporizer operators shall be trained in the proper operation of all such equipment. Training shall consist of a review of and familiarization with the manufacturer's operating instructions, at a minimum. The permittee shall maintain records of the required training including a statement of time, place and nature of training provided. The permittee shall have available good written operating procedures and a maintenance schedule for each boiler and vaporizer. These procedures shall be based

on the manufacturer's recommendations, at a minimum. All records required by this condition shall be kept on site and made available for inspection by the DEQ.
(9 VAC 5-80-1180)

- ✓ 28. **Emission Limits** - Emissions from the powerhouse stack (Stack Ref. 2-205) shall not exceed the limits specified below:

Sulfur Dioxide	788.0 lbs/hr
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Annual emissions shall be calculated monthly as the sum of each consecutive 12-month period.
(9 VAC 5-50-260)

- ✓ 29. **Emission Limits** - Emissions from the Dowtherm[®] vaporizer (Ref. 2-205(V#3)) shall not exceed the limits specified below:

Particulate Matter	0.53 lbs/hr	1.95 tons/yr
PM-10	0.37 lbs/hr	1.36 tons/yr
Sulfur Dioxide	6.79 lbs/hr	25.19 tons/yr
Nitrogen Oxides (as NO ₂)	3.19 lbs/hr	11.83 tons/yr
Carbon Monoxide	1.81 lbs/hr	6.55 tons/yr

Annual emissions shall be calculated monthly as the sum of each consecutive 12-month period.
(9 VAC 5-50-260)

- ✓ 30. **Visible Emission Limit** - Visible emissions from the powerhouse stack (Stack Ref. 2-205) shall not exceed 20% opacity as determined by the EPA Method 9 (reference 40 CFR 60, Appendix A). This condition applies at all times except during startup, shutdown, and malfunction.
(9 VAC 5-50-80 and 9 VAC 5-50-260)

31. **Requirements by Reference** – Except where this permit is more restrictive than the applicable requirement, the Dowtherm[®] vaporizer (Ref. 2-205(V#3)) shall be operated in accordance with the requirements of 40 CFR 60, Subpart Dc.
(9 VAC 5-50-400 and 9 VAC 5-50-410)

RECORDS - POWERHOUSE

32. **On Site Records** - The permittee shall maintain records of all emission data and operating parameters necessary to demonstrate compliance with this permit. The content of and format of such records shall be arranged with the Director, Valley Region. These records shall include, but are not limited to:

a. Dowtherm[®] Vaporizer (Ref. 2-205(V#3))

- i. Daily, monthly and annual throughput of natural gas (in million cubic feet) and distillate oil (in gallons). Annual throughput shall be calculated monthly as the sum of each consecutive 12-month period.
- ii. Hours of operation, calculated monthly as the sum of each of each consecutive 12-month period.
- iii. Average hourly particulate matter, PM-10, sulfur dioxide, nitrogen oxides (as NO₂) and carbon monoxide emission calculations (in pounds per hour), calculated monthly using calculation methods approved by the Director, Valley Region.
- iv. Annual particulate matter, PM-10, sulfur dioxide, nitrogen oxides (as NO₂) and carbon monoxide emission calculations, calculated monthly as the sum of each consecutive 12-month period, using calculation methods approved by the Director, Valley Region.
- v. Results of all stack tests and visible emission evaluations.

b. Powerhouse Stack (Stack Ref. 2-205)

- i. Hourly sulfur dioxide emission calculations (in pounds per hour) and supporting documentation, using the calculation methodology, monitoring and recordkeeping contained in Attachment A of this permit.
- ii. Results of all stack tests and visible emission evaluations.
- iii. All fuel supplier certifications and fuel quality reports for all boilers and Dowtherm[®] vaporizers.
- iv. Records of the required boiler and Dowtherm[®] vaporizer operator training including a statement of time, place and nature of training provided.

These records shall be available for inspection by the DEQ and shall be current for the most recent five years.

(9 VAC 5-50-50)

33. **Semi-Annual Reports** - The permittee shall submit fuel quality reports to the Director, Valley Region, within 30 days after the end of each semi-annual period ending June 30 and December 31. If no shipments of distillate oil were received during the semi-annual period, the semi-annual report shall consist of the dates included in the semi-annual period and a statement that no oil was received during the semi-annual period. If distillate oil was received during the semi-annual period, the report shall include:
- a. Dates included in the semi-annual period;
 - b. A copy of all fuel supplier certifications for all shipments of distillate oil received during the semi-annual period or a semi-annual summary from each fuel supplier that includes the information specified in Condition 25 for each shipment of distillate oil to be burned in the Dowtherm[®] vaporizer (Ref. 2-205(V#3)); and
 - c. A signed statement from the owner or operator of the facility that the fuel supplier certifications or summaries of fuel supplier certifications represent all of the distillate oil burned or received for the Dowtherm[®] vaporizer (Ref. 2-205(V#3)).

One copy of the semi-annual report shall be submitted to:

Associate Director
Office of Air Enforcement (3AP10)
U. S. Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103-2029

(9 VAC 5-80-1180, 9 VAC 5-50-50 and 9 VAC 5-50-410)

GENERAL CONDITIONS

34. **Right of Entry** - The permittee shall allow authorized local, state, and federal representatives, upon the presentation of credentials:
- a. To enter upon the permittee's premises on which the facility is located or in which any records are required to be kept under the terms and conditions of this permit;
 - b. To have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit or the State Air Pollution Control Board Regulations;
 - c. To inspect at reasonable times any facility, equipment, or process subject to the terms and conditions of this permit or the State Air Pollution Control Board Regulations; and
 - d. To sample or test at reasonable times.

For purposes of this condition, the time for inspection shall be deemed reasonable during regular business hours or whenever the facility is in operation. Nothing contained herein shall make an inspection time unreasonable during an emergency.

(9 VAC 5-170-130)

35. Notification for Control Equipment Maintenance - The permittee shall furnish notification to the Director, Valley Region, of the intention to shut down or bypass, or both, air pollution control equipment for necessary scheduled maintenance, which results in excess emissions for more than one hour, at least 24 hours prior to the shutdown. The notification shall include, but is not limited to, the following information:

- a. Identification of the air pollution control equipment to be taken out of service, as well as its location and registration number;
- b. The expected length of time that the air pollution control equipment will be out of service;
- c. The nature and quantity of emissions of air pollutants likely to occur during the shutdown period;
- d. Measures that will be taken to minimize the length of the shutdown or to negate the effect of the outage.

(9 VAC 5-20-180 B)

36. Notification for Facility or Control Equipment Malfunction - The permittee shall furnish notification to the Director, Valley Region, of malfunctions of the affected facility or related air pollution control equipment that may cause excess emissions for more than one hour, by facsimile transmission, telephone or telegraph. Such notification shall be made as soon as practicable but not later than four daytime business hours after the malfunction is discovered. The permittee shall provide a written statement giving all pertinent facts, including the estimated duration of the breakdown, within 14 days of discovery of the malfunction. When the condition causing the failure or malfunction has been corrected and the equipment is again in operation, the permittee shall notify Director, Valley Region, in writing.

(9 VAC 5-20-180 C)

37. Violation of Ambient Air Quality Standard - The permittee shall, upon request of the DEQ, reduce the level of operation or shut down a facility, as necessary to avoid violating any primary ambient air quality standard and shall not return to normal operation until such time as the ambient air quality standard will not be violated.

(9 VAC 5-20-180 I)

38. Maintenance/Operating Procedures - The permittee shall take the following measures in order to minimize the duration and frequency of excess emissions, with respect to air pollution control equipment, monitoring devices, and process equipment which affect such emissions:

- a. Develop a maintenance schedule and maintain records of all scheduled and non-scheduled maintenance.
- b. Maintain an inventory of spare parts.
- c. Have available written operating procedures for equipment. These procedures shall be based on the manufacturer's recommendations, at a minimum.
- d. Train operators in the proper operation of all such equipment and familiarize the operators with the written operating procedures. The permittee shall maintain records of the training provided, including the names of trainees, the date of training and the nature of the training.

Records of maintenance and training shall be maintained on site for a period of five years and shall be made available to DEQ personnel upon request.
(9 VAC 5-50-20 E)

39. Permit Suspension/Revocation - This permit may be suspended or revoked if the permittee:

- a. Knowingly makes material misstatements in the application for this permit or any amendments to it;
- b. Fails to comply with the conditions of this permit;
- c. Fails to comply with any emission standards applicable to the equipment listed in Conditions 2, 8, and 17;
- d. Causes emissions from this facility which result in violations of, or interferes with the attainment and maintenance of, any ambient air quality standard;
- e. Fails to operate this facility in conformance with any applicable control strategy, including any emission standards or emission limitations, in the State Implementation Plan in effect on the date that the application for this permit is submitted;
- f. Fails to modify or operate this facility in accordance with the application for this permit or any amendments to it; or
- g. Allows the permit to become invalid.

(9 VAC 5-80-1210)

40. Change of Ownership - In the case of a transfer of ownership of a stationary source, the new owner shall abide by any current permit issued to the previous owner. The new owner shall notify the Director, Valley Region, of the change of ownership within 30 days of the transfer.
(9 VAC 5-80-1240)

41. **Registration/Update** - Annual requirements to fulfill legal obligations to maintain current stationary source emissions data will necessitate a prompt response by the permittee to requests by the DEQ or the Board for information to include, as appropriate: process and production data, changes in control equipment, and operating schedules. Such requests for information from the DEQ will either be in writing or by personal contact. The availability of information submitted to the DEQ or the Board will be governed by applicable provisions of the Freedom of Information Act, §§ 2.2-3700 through 2.2-3714 of the Code of Virginia, § 10.1-1314 (addressing information provided to the Board) of the Code of Virginia, and 9 VAC 5-170-60 of the State Air Pollution Control Board Regulations. Information provided to federal officials is subject to appropriate federal law and regulations governing confidentiality of such information.
(9 VAC 5-170-60 and 9 VAC 5-20-160)

42. **Permit Copy** - The permittee shall keep a copy of this permit on the premises of the facility to which it applies.
(9 VAC 5-80-1180)

STATE-ONLY ENFORCEABLE REQUIREMENTS

This section is included pursuant to 9 VAC 5-60-300, *et.seq.*, and is not required under the federal Clean Air Act or under any of its applicable federal requirements.

43. **Emission Limits** - Emissions from Lycra® (Classic and NAX) shall not exceed the limits specified below:

Formaldehyde	1.2 lbs/hr	5.2 tons/yr
--------------	------------	-------------

Annual emissions shall be calculated monthly as the sum of each consecutive 12-month period.
(9 VAC 5-60-320)

44. **On Site Records** - The permittee shall maintain records of all emission data and operating parameters necessary to demonstrate compliance with this permit. The content of and format of such records shall be arranged with the Director, Valley Region. These records shall include, but are not limited to:
- The annual hours of operation of Lycra® (Classic and NAX), calculated monthly as the sum of each consecutive 12-month period.
 - Average hourly formaldehyde emissions (in pounds) from Lycra® (Classic and NAX), calculated as a monthly average, using calculation methods approved by the Director, Valley Region.
 - Annual formaldehyde emissions (in tons) from Lycra® (Classic and NAX), calculated monthly as the sum of each consecutive 12-month period, using calculation methods approved by the Director, Valley Region.

d. Results of all stack tests and visible emission evaluations.

These records shall be available for inspection by the DEQ and shall be current for the most recent five years.

(9 VAC 5-50-50)

ATTACHMENT C

22 MMBtu/hr Vaporizer #3 Emission Calculations Using Natural Gas and Fuel Oil

NOTE: Zero (0) shows as ---

CRITERIA POLLUTANTS

07/10/06

```
>>> Source Name:      INVISTA (Vaponzer #3)
>>> Registration #:   80517
>>> Boiler Capacity:  22.0 million BTU/hr
```

THROUGHPUTS		#6 OIL	#5 OIL	#4 OIL	#2 OIL	#1 OIL	GAS	LPG
>>>	per hour	0 gal	0 gal	0 gal	0 gal	0 gal	21 mcf	0 gal
	per year	0 gal	0 gal	0 gal	0 gal	0 gal	156,000 mcf	0 gal
	max. allow. / yr	1,284,800 gal	1,320,000 gal	1,338,333 gal	1,396,522 gal	1,438,209 gal	186,383 mcf	2,106,230 gal
	Hours/yr	0	0	0	0	0	7332	0
								7332 <- Total HR/YR

[illegible]

----- Emission Factors

TSP	9.19 S +3.22	10	7	2	2	7.6	0.6
PM10	8.03 S +2.65	8.6	6	1	1	7.6	0.6
SO2	157 S	157 S	150 S	142 S	142 S	0.6	0.1 S
CO	5	5	5	5	5	84	3.2
NOx	55	55	20	20	20	100	19
VOC	0.28	0.28	0.2	0.2	0.2	5.5	0.5
LEAD is included on HAPs worksheet							

NOTE: < - revised based on small boiler data from AP-42 5th ed. Sup.B,C,D (as of 9/1/98)

EMISSIONS, UNCONTROLLED & PREDICTED: max hourly, expected annual throughput

LB/HR	#6 OIL	#5 OIL	#4 OIL	#2 OIL	#1 OIL	GAS	LPG	MAXIMUM LB/HR
TSP	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.16
PM10	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.16
SO2	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
CO	0.00	0.00	0.00	0.00	0.00	1.79	0.00	1.79
NOx	0.00	0.00	0.00	0.00	0.00	2.13	0.00	2.13
VOC	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.12
LEAD is included on HAPs worksheet								

[illegible]

SUGGESTED PERMIT LIMITS: same as uncontrolled pollutants < 0.5 tn/yr not listed

	LB/HR	TN/YR
TSP	0.16	0.59
PM10	0.16	0.59
SO2	0.00	0.00
CO	1.79	6.55
NOx	2.13	7.80
VOC	0.0	0.00

LEAD is included on HAPs worksheet

NOTE: Zero (0) shows as ---

CRITERIA POLLUTANTS

07/10/06

```
>>> Source Name:      INVISTA (Vaporizer #3)
>>> Registration #:   80517
>>> Boiler Capacity:  22.0 million BTU/hr
```

THROUGHPUTS		#6 OIL	#5 OIL	#4 OIL	#2 OIL	#1 OIL	GAS	LPG	
>>>	per hour	0 gal	0 gal	0 gal	0 gal	0 gal	21 mcf	0 gal	
	per year	0 gal	0 gal	0 gal	0 gal	0 gal	156,000 mcf	0 gal	
	max. allow. / yr	1,284,800 gal	1,320,000 gal	1,338,333 gal	1,396,522 gal	1,438,209 gal	186,383 mcf	2,106,230 gal	
	Hours/yr	0	0	0	0	0	7332	0	7332 <- Total HR/YR

[illegible]

TSP	9.19 S +3.22	10	7	2	2	7.6	0.6
PM ₁₀	8.03 S +2.65	8.6	6	1	1	7.6	0.6
SO ₂	157 S	157 S	150 S	142 S	142 S	0.6	0.1 S
CO	5	5	5	5	5	84	3.2
NOx	55	55	20	20	20	100	19
VOC	0.28	0.28	0.2	0.2	0.2	5.5	0.5

LEAD is included on HAPs worksheet

NOTE: < - revised based on small boiler data from AP-42 5th ed. Sup.B,C,D (as of 9/1/98)

EMISSIONS, UNCONTROLLED & PREDICTED: max hourly, expected annual throughput

LB/HR	#6 OIL	#5 OIL	#4 OIL	#2 OIL	#1 OIL	GAS	LPG	MAXIMUM LB/HR
TSP	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.16
PM10	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.16
SO2	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
CO	0.00	0.00	0.00	0.00	0.00	1.79	0.00	1.79
NOx	0.00	0.00	0.00	0.00	0.00	2.13	0.00	2.13
VOC	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.12
LEAD is included on HAPs worksheet								

TN/YR	#6 OIL	#5 OIL	#4 OIL	#2 OIL	#1 OIL	GAS	LPG	TOTAL TN/YR
TSP	0.00	0.00	0.00	0.00	0.00	0.59	0.00	0.59
PM10	0.00	0.00	0.00	0.00	0.00	0.59	0.00	0.59
SO2	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.05
CO	0.00	0.00	0.00	0.00	0.00	6.55	0.00	6.55
NOx	0.00	0.00	0.00	0.00	0.00	7.80	0.00	7.80
VOC	0.00	0.00	0.00	0.00	0.00	0.43	0.00	0.43

LEAD is included on HAPs worksheet

SUGGESTED PERMIT LIMITS: same as uncontrolled pollutants < 0.5 tn/yr not listed

	LB/HR	TN/YR
TSP	0.16	0.59
PM10	0.16	0.59
SO2	0.00	0.00
CO	1.79	6.55
NOx	2.13	7.80
VOC	0.0	0.00

LEAD is included on HAPs worksheet

ATTACHMENT D

Compliance Assurance Monitoring (CAM) Plan for Baghouse (2-205 H)

Compliance Assurance Monitoring Plan (Baghouse: 2-205 H)

Indicator	Indicator 1-A	Indicator 1-B	Indicator 2
	Opacity	Visible Emission Evaluation (optional - to determine if excursion occurs)	Pressure drop
Measurement approach	Visible emission observations conducted daily at the powerhouse stack.	Method 9 VEE in accordance with 40 CFR 60, Appendix A conducted optionally to determine if an excursion occurs. Results recorded upon completion of each Method 9. If visible emissions are observed by Indicator 1-A and a Method 9 VEE is not conducted, then an excursion has occurred.	Pressure drop through the baghouse is measured continuously using a differential pressure gauge. Results recorded continuously.
Indicator range	An excursion is defined as the presence of any visible emission from the powerhouse stack unless otherwise determined by a Method 9 VEE.	An excursion is defined as an average opacity greater than 20% during one six-minute period in any one hour.	An excursion is defined as pressure drops below 1" water column and above 8" water column. Excursions trigger an inspection, corrective action and a reporting requirement.
Quality Improvement Plan (QIP) Threshold	2 excursions in a 2 week period	Single excursion	NA
Performance criteria: Data Representativeness	Observation of visible emissions indicates possible damage to bag filter.	Observation of visible emissions greater than 20% indicates corrective action which may include replacement or maintenance of bag filters.	Observation of pressure drop daily for comparison to the range indicative of proper operation of fabric filter.
Verification of operational status	Records that indicate time, facility operational status and results of each observation.	Pressure drop across the baghouse.	Pressure drop across the baghouse.
QA/QC practices and criteria	Qualified personnel to perform observations.	Trained personnel shall perform Method 9.	Qualified personnel perform the inspection and maintenance.
Monitoring frequency and data collection procedure	Daily observation.	Upon the observation of visible emissions from powerhouse stack.	Daily inspection.

ATTACHMENT E

EPA's Determination on BART Eligible Boilers

Pandey,Janardan

From: Kiss,Michael
Sent: Friday, June 09, 2006 3:44 PM
To: Foley,Sharon; Pandey,Janardan
Cc: Bauer,Jaime; McBee,Kenneth
Subject: FW: Compiled Draft for Review Fw: Draft Clarifying Email on Small (</= 250) Boilers for BART eligibility

FYI,

INVISTA is no longer BART eligible. We will need to inform them of this decision. We can talk next week if you wish.

Thanks.

Mike

-----Original Message-----

From: Schutt.Dick@epamail.epa.gov [mailto:Schutt.Dick@epamail.epa.gov]
Sent: Wednesday, June 07, 2006 12:31 PM
To: SStringfellow@adem.state.al.us
Cc: Notarianni.Michele@epamail.epa.gov; Difrank.Stacy@epamail.epa.gov; Sheila.Holman@ncmail.net; Stahl.Cynthia@epamail.epa.gov; BEDENBCW@dhec.sc.gov; Kaufman.Kathy@epamail.epa.gov; Pat Brewer; Howard, Chris; Bacon, Leigh; Carr, Doug; Kitchens, Jeff
Subject: Fw: Compiled Draft for Review Fw: Draft Clarifying Email on Small (</= 250) Boilers for BART eligibility

Shelby,

This is the "above e-mail" referenced in the first one I sent to you. This one was sent to the National EPA Regional Haze Workgroup. If this isn't clear, let me know and we will try to be clearer. thanks. Dick

----- Forwarded by Dick Schutt/R4/USEPA/US on 06/07/2006 12:27 PM -----

Kathy
Kaufman/RTP/USEP
A/US

06/07/2006 11:25
AM

To	Dick Schutt/R4/USEPA/US@EPA
cc	Michele Notarianni/R4/USEPA/US@EPA, Todd Hawes/RTP/USEPA/US@EPA
Subject	Fw: Compiled Draft for Review Fw: Draft Clarifying Email on Small (</= 250) Boilers for BART eligibility

Dick -- here's the final language on the boiler issue to send out, per Michele. Thanks.

Kathy Kaufman
EPA/OAQPS Mail Code C539-03
Research Triangle Park, NC 27711

Phone 919 541 0102
Fax 919 541 5489

----- Forwarded by Kathy Kaufman/RTP/USEPA/US on 06/07/2006 11:19 AM

Michele
Notarianni/R4/US
EPA/US

06/05/2006 09:23
AM

Todd Hawes/RTP/USEPA/US@EPA,
Kathy Kaufman/RTP/USEPA/US@EPA,
Joe Kordzi/R6/USEPA/US@EPA

To

cc

Subject
Compiled Draft for Review Fw:
Draft Clarifying Email on Small
(<= 250) Boilers for BART
eligibility

EPA Regional Haze Contacts:

In response to your questions, this e-mail clarifies the one sent to you on May 31 (see below) addressing fossil-fuel boilers having less than or equal to 250 MMBTU/hr heat input. The intention was to address the potential BART eligibility of boilers that fall below the 250 MMBTU/hr threshold. The May 31 email incorrectly refers to these boilers as "small Category 22 boilers".

A fossil-fuel boiler having less than or equal to 250 MMBTU/hr heat input (i.e., falls below the Category 22 thresholds) that serves a process only by contributing energy (e.g., steam or heat) is not considered to be BART-eligible. However, if the boiler is determined to be integral to the process (i.e., the boiler uses any by-products of the process, and/or the boiler serves the process in any way beyond simply contributing steam or heat), then the boiler should be included as BART eligible, and its category would be that of the process which it serves (e.g., Category 21 - chemical process plant).

If you have any questions on this e-mail, or would like further information on this issue, please contact Kathy Kaufman at OAQPS at 919-541-0102.

Michele Notarianni
Regional Haze Coordinator
EPA Region 4
404-562-9031 (phone)
notarianni.michele@epa.gov (e-mail)